approach

DECEMBER 1964 THE NAVAL AVIATION SAFETY REVIEW

A City Sleeps . . .

A silent tribute to servicemen on duty throughout the world this Holiday Season.

The takeoff...

off...

S
C
V

Short winded CRUSADER with a full blown EMERGENCY

A Charlie damage spectacular.

Four F-8Es were cleared for section IFR takeoffs on an 8000 ft runway. The weather was 700 ft overcast with tops at 2500 ft. After the first section had taken off, the second section taxied into position and turned up. A thumbs-up signal was exchanged; the pilots released the brakes, lit the burners and started their section takeoff roll.

Approximately 2000 ft down the runway, the wingman's afterburner blew out. The aircraft continued, streaming raw atomized fuel out of the tailpipe while the pilot attempted an afterburner relight. At 120 knots with 4000 ft of runway left, the pilot elected to continue his takeoff, still trying to relight the burner. At 135 knots, the pilot rotated the nose. Rate of acceleration dropped off abnormally. Still streaming fuel out of the tailpipe, the aircraft became airborne momentarily to an altitude of about six feet. After barely clearing the arresting chain Davis barrier at the end of the runway, the *Crusader* started slowly sinking back to the deck. Maintaining 16 units angle of attack, the pilot made repeated attempts at relighting the burner.

No luck!

The *Crusader* touched down on the overrun, bounced back into the air and touched down again in the grass field beyond. The aircraft next went through a 12 ft chain link perimeter fence and struck a 10 in. by seven ft underground cable sign—2500 ft beyond the end of the runway. During the fence collision, the port main landing gear was torn loose, the air-oil cooler line was severed and multiple gouges were incurred in the airframe and flight controls. Simultaneously with the sign collision, the afterburner finally relit. "It's a good thing," the pilot said afterwards, "I was about ready to eject!"

As the aircraft became airborne, the struggle over and between the nearby hills and mountains was somewhat less spectacular. The aircraft was flyable and responded normally. After things had quieted down somewhat, the pilot notified departure control and lead of his difficulties during the climb through the overcast. On top he took stock of his predicament noting "0" oil pressure. He set the throttle at 88%, commenced dumping fuel, dropped out the Ram Air Turbine (RAT), declared an emergency and requested an immediate radar approach from the controlling agency.

The radar controlled descent was normal and the *Crusader* broke out of the overcast at 900 ft MSL. Upon lowering the landing gear, an unsafe nose wheel was indicated. After "blowing" the gear down with the air bottle, all three indicated down and locked. With the throttle still set at 88%, the pilot continued his approach.

During the final approach phase, the outside GCA observer noted the left main wheel and strut turned about 90 degrees and appeared to be almost sheared off. The pilot was informed of this by the controller

By LCDR R.A. Wigent USN

grass field touchdown...

and waved off with his power still set at 88%. He was able to do this since he had previously dumped the wing fuel and was relatively light. The angle of attack varied from 14 to 16 units during the waveoff and second approach.

The *Crusader's* second landing pattern was wide since he intended to take the Morest gear. The final approach was low and flat with the aircraft touchdown about 1000 ft short of the Morest.

2

Upon touchdown, the left main gear collapsed and the *Crusader* slid across the Morest cross deck pendants well to the left of the centerline—the tailhook failed to engage any of the pendants.

The aircraft left the runway about 500 ft after it passed the Morest gear—missing an MB-5 fire truck by mere inches. The MB-5 driver had seen the *Crusader* coming and was backing at full throttle when the aircraft passed him. The rest of the crew had previously abandoned the MB-5 when collision seemed imminent.

The *Crusader* skidded about another thousand feet before coming to rest. There was no fire and the pilot shut down the engine and exited the aircraft uninjured.

Since afterburner blow-out is basically a maintenance malfunction the engine was first given a complete inspection in the aircraft and was later forwarded to an overhaul activity for DIR. No malfunction could be found. The throttle and afterburner microswitch was actuated 33 times without a failure of the afterburner to light off. The DIR further supported the findings. The board therefore concluded that this was one of several cases of afterburner blow-out with no apparent cause or malfunction.

the fence...

Two significant factors that cannot be overlooked as possible contributing factors are:

- The inadvertent shut-off due to afterburner modulation by the pilot.
- Blow-out possibly due to the already critical afterburner fuel-air ratio being upset by the exhaust of the lead aircraft. Jet wake will shift with the winds and also expand to cover a larger area as distance aft of the lead aircraft is increased. This also might explain why the afterburner was so slow to relight. Pratt & Whitney Aircraft recognizes the problem but has no solution due to the many complex variables involved.

Although conjecture, these two factors become more significant when consideration is given to the fact that the investigation failed to reveal a material failure/malfunction of the afterburner system.

Although afterburner blowout is an emergency situation, it was not believed by the board to present enough of an emergency situation in the F-8 to be considered as the primary cause of this accident. The *Crusader* has excellent takeoff characteristics using just the basic engine—provided the afterburner nozzles are closed.

The pilot recognized the fact that the afterburner blow-out presented an emergency, but failed to properly analyze the situation and execute the proper procedure to alleviate the problem. He failed to realize that when the throttle is in the afterburner detent without the afterburner functioning, the nozzles remain open with a resultant loss of at least 20% MRT. This fact was evidenced by several witnesses when they stated that the aircraft was emitting white smoke (raw atomized fuel) from the tail and appeared to be moving rather "sluggishly" down the runway.

the cable sign and the hills beyond.

Although the pilot used the proper technique in handling the oil system failure, i.e., setting his power at 88% and landing as soon as possible, he failed to capitalize on his landing into the Morest. If he had landed into the Morest rather than being fast and landing 1000 ft short and then bounding over the wire, the aircraft would have sustained less damage. Had time and equipment permitted, an LSO with a radio would have been a tremendous assistance.

It was recommended by the accident board and all endorsers that the GO/NO-GO criteria for afterburner blow-outs be reviewed:

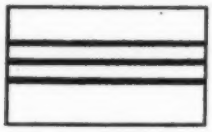
- If burner blow-out occurs in the early stages of takeoff roll, immediately abort and return to the line.

- If burner blow-out occurs shortly before, during, or immediately after lift off, deselect afterburner and continue takeoff in MRT. *Do not* recycle the afterburner.

It is perhaps interesting to note that one week prior to the accident discussed here, another afterburner blow-out accident happened in another squadron; this time to a section leader during an alert scramble. In this accident, afterburner blow-out similarly occurred at or near lift-off and again without deselection. The mishap was further complicated by premature gear retraction. As a result, the *Crusader* settled back on the runway and did not get airborne again. The aircraft skidded approximately 2500 ft on its belly and suffered overhaul damage before coming to a rest. Again, there was no conclusive evidence as to why the afterburner blew out.

Afterburner blow-out doesn't occur often—however, often enough to be of some concern. An alert professional aviator armed with good operating procedure can prevent afterburner blow-out from being aggravated into a full blown emergency.

MAN with a PURPOSE



One day in January 1964 a young bright-eyed lieutenant of the Vietnamese Air Force boarded a MATS C-135 "flying submarine type" transport at Saigon Airport, South Vietnam. His destination was University of Southern California at Los Angeles. His goal: graduate from the Flying Safety Officer Course, MAP Class 64-1.

Name of the young VNAF lieutenant: Lt. Tran Trung Chinh. My name.

I was born at Hanoi the capital of North Vietnam from an average family. I lived there during my childhood and spent some of the best years of my life there. From generation to generation my ancestors lived and died there. During my youthful days I spent my time attending a French high school called Lycee, an equivalent of the American junior high school, until 1954 when the costly eight year Indo-China war ended.

My country was divided at the Geneva conference table on July 20, 1954. . . . The northern half with a population of about 13 million went to the Communists and the southern half with about 11 million was to be ruled by a national government in Saigon.

According to the Geneva agreement anyone living in one zone who wished to go to the other was not only allowed to but was to be assisted to do so until the deadline in May 1955. An international control commission composed of Canadians, Poles and Indians was created to supervise the evacuation and make the exchange of people between the two zones easier.

Before the Communists took over Hanoi many people elected to give up all their possessions such as wealth, homes, farms, rice paddies, everything they had, to go south for freedom. But not my family. We thought, "Why go south while here we are independent. We are free. We got rid of the French. Now Vietnam for the Vietnamese. Why go south?" Not until later did we find out that the Communists were worse than the French.

When the day of liberation of Hanoi took place we celebrated in a big ceremony. The biggest ever. Even bigger than the liberation of Paris during World War II. The reason was simple. We were under the French domination for almost one century. We had lived through eight years of fighting. Now every inch of Hanoi was Vietnamese. Our people celebrated the liberation day with tears, joy, parades, parties, and smiles on all lips.

We lived in this festival atmosphere for about a month or so before the Communists began tightening their controls. Had we known that, oh God, had we known that before. . . .

Like I said, we had complete freedom to choose the zone in which we'd like to settle down. In the early months many people went southward. Then the Communists realized that too many people were fleeing the north to go south and they began to take measures to slow down the exodus.

In an attempt to control the activities of people at Hanoi and prevent them from going southward the Communists stationed their spy agents at every two houses in the city. And they did it subtly. One example: part of my house was rented to a man who ran a bookstore. We knew him pretty well and, as far as we knew, he had no relatives at all. Suddenly one day he introduced us to a young man he called "brother." We took it for granted and didn't pay much attention to him. Only later did we discover that he was a spy.

The Communists tightened their grip in many ways. One of their favorite weapons was using the radio for propaganda purposes. By all means they wanted us to be brainwashed of all capitalistic thoughts, ideas, ways of living and so forth. So at every corner of every main street in the city they installed loudspeakers. They were turned on at full volume shouting words and words and words of propaganda from five a.m. till midnight with *no* interruption.

At five a.m., collective physical education by radio

began. All of us, no matter young or old, had to jump out of bed and out to the street for 15 minutes P.E. And, by golly, you had to obey or you were in deep trouble. Then we went to school or to work.

In the evening the order was that we'd have meetings by block. The typical meeting went like this: We assembled at a certain point; they divided us into four categories: kids, young boys and girls, men and women, old people. So we had four different meetings in different places.

What they wanted from us young boys during the meeting was a report of what Dad did and what our Mom did during the day. They kept pouring questions on us until they found out the detailed daily activities of our parents. After that we'd sing songs praising Red China and the Soviet Union. We'd perform a peace dance and finally we'd have a critique of what we had done that was wrong.

Suddenly we realized that they, the Communists, were not "one of us" any more. The way they dressed, the way they danced, the way they sang made them look more like Red Chinese than Vietnamese. We didn't break off until 11 p.m. Next morning P.E., at 5 a.m. and so on.

Pressure began to build up as we lived under control and surveillance practically every minute of every hour. Suppose we killed a chicken for dinner. We had to report during the meeting at night that today we killed a chicken for dinner. Everything to the smallest detail had to be reported. I knew one family where the father and mother had been questioned all one night only because they failed to report, but their child did, that they killed a duck during the day for a little celebration. No, they didn't throw them in jail. But the way they questioned people, believe me, was by far worse than being in jail.

By then two months had passed by. We had the idea to escape. We had to escape, but how? The Communists used every trick to prevent us from going south. They used propaganda, brain wash, reeducation, threats, lies, promises—oh yes, lots of of promises, violence and even murder.

Due to the long and complicated process of withdrawing their troops from North Vietnam the French still had control of the port of entry, the city of Haiphong, located about 60 miles east of Hanoi. Under the Geneva agreement anyone who wanted to go south would proceed to Haiphong first, then on to Saigon. But the Communists violated the agreement by preventing the people from going to Haiphong. They stationed their police agents at every access of communication with orders to shoot if necessary to prevent the southward rush.

Finally we dreamed up a scheme. My parents and I pretended to go out for a visit to a nearby village. We left everything behind. We didn't dare use any means of transportation lest we run into the communist troops and end up in jail. We had to go way, way out in the country and, village by village, we walked through days and nights. Thanks to their lack of security system at the time—and luck—we made it to Haiphong in one piece.

Our trip lasted five days. We walked about 200 miles. Later we heard the news that one family we knew well, followed the same route, were caught and ended-up in jail for illegally breaking out of the so-called Democratic Republic of North Vietnam. What irony!

A Military Sea Transport Service vessel took us safely to Saigon, the land of freedom.

We settled down at Saigon and I got a job to support my family until one day I realized that if we wanted to go back to our fatherland, we would have to fight our way back. And the only way we could achieve that goal was to join our country's armed forces. I choose the Air Force.

I enlisted as an aviation cadet in 1958 and was sent to pilot training. After two years of academics, physical training, primary, solo, more landings, instruments, formation, acrobatics, night flying, a couple of "pink slips" I finally got my wings and my commission. Right after my graduation I was assigned to a squadron based at Danang, about 125 miles south of the 17th parallel. After two more years of flying, to prove myself, I was picked for the Flying Safety job in the squadron. I participated in all aircraft accident investigations in my squadron area, conducted safety meetings and lectures for my fellow pilots. I was also contributing editor to our mimeographed counterpart of APPROACH magazine. Due to my zeal, my eagerness and real interest in the business I was selected to attend the Flying Safety Officer's Course at the University of Southern California.

On January 6, 1964, I boarded a MATS transport at Saigon Airport. I was on my way to USC to help my Air Force prevent accidents.

I want this very much. You will understand why.

—*University of Southern California Alumni Review.*

By Lt. Tran Trung Chinh
South Vietnamese Air Force

A Half Century Ago

Courses of Instruction and Required Qualifications of Personnel for the Air Service of the United States Navy (1915)

1. In accordance with the department's order of April 10, 1913, the following instructions for the training of officers and enlisted men for the Air Service are issued:

a. Classes of officers and men to be trained for the Air Service will be detailed every three months beginning January 1, 1916.

b. The course of instruction will not exceed 2 years for officers and 18 months for enlisted men.

c. The classes of officers will be composed of eight line officers. The officers must have served at least two years in seagoing ships.

d. The classes of enlisted men will be composed of:

Eight chief petty officers, seaman branch.

Two chief petty officers, preferably machinist's mates.

Two petty officers, first class, preferably carpenter's mates.

Two petty officers, second class, preferably electrician's or gunner's mates.

Two seamen.

e. Enlisted men, to be eligible for this duty, must have had at least two year's service in a seagoing ship, must be under forty years of age, and must be recommended by their commanding officers on account of their very good record.

f. The eight chief petty officers of the seaman branch will be trained to steer aircraft and will be required to pass the same physical examination required of officers detailed to aeronautic duty. The remainder of each class will be trained in handling aircraft machinery.

g. Each officer or man regularly ordered to duty involving actual flying in aircraft will be given orders by the commanding officer of his ship or station when he takes up that duty, appointing him as a student or qualified aviator

Up to 1915 the training syllabus at Pensacola depended entirely on the ideas of the instructors. In the winter of 1915-16, the first effort was made to establish the training of naval aviators along definite lines. Some terms have changed but the underlying purpose is still valid.

Non-syllabus maneuver in WWI N-9 trainer.

or as a student or qualified airman involving actual flying in aircraft in accordance with act of Congress passed March 3, 1915. These orders will be forwarded to the department for approval before extra compensation is paid.

h. This circular will be revised each six months. For this purpose the commandant of the United States Navy Aeronautic Station, Pensacola, will convene a board of naval aviators on the 1st of June and 1st of December to recommend the necessary corrections and revision for publication of this circular on the 1st of July and 1st of January, respectively. Thus the requirements should be established every six months to keep up with progress, and also anticipate the most probable progress of the near future, so that the requirements will be possible of accomplishment by those officers and men detailed for training on the date of issue of the circular.

Course of Instruction of Student Naval Aviators

1. Upon reporting at the aeronautic station student naval aviators will supply themselves with such textbooks as are prescribed by the commandant of the station.

2. The course of instruction begins in aeroplanes and will be grouped under the following heads:

Shopwork
Lectures
Flying lessons
Elementary flying
Advanced flying
Aircraft station administration
Examinations

3. Aeroplane shopwork will be divided into three parts: Machinery, Structural, Instrument.

4. Lectures—The officer in

A casual and individualistic approach to "flight gear" is shown by the second enlisted class at Pensacola (started 1920, finished 1921). From left to right they are reported to be: Steve Dunn, Bill Cluthe, unknown, Cyrus Sylvester, P. I. Gunn, unknown, Denton, Mike La Porte, Andrews, unknown, unknown.

Another non-syllabus maneuver occurring in pre-World War II N3N trainer.

charge of Flying School will lecture or arrange for lectures once each week. These lectures will be prepared so as to assist the progress of the course of instructions, also to stimulate original thought and development. Copies of lectures will be furnished the students.

5. Flying lessons—During their first week at the station, students will be given occasional flights as passengers for the purpose of giving them an idea of the "air feel" and for general observation of the handling of an aeroplane. The actual flying lessons will then begin and progress through the following:

Adjustment of safety jacket and straps.

Inspection of machine required in safety orders.

Handling controls while machine is on the ground.

Handling controls in straight horizontal flights.

Handling controls and throttle in straight horizontal flights.

Turning, right and left.

Figure eights.

Straight glides.

Get-aways

Landings, with and without power.

Spirals

Rough-weather flying.

Taking care of all casualties or unusual conditions that will be encountered in flight that can be safely demonstrated by the instructor.

At least once each week during the first month the student is flying, and thereafter once each month, he shall be examined physically immediately after a flight by the medical officer of the station, who will keep a careful record of his physical condition,

Flight gear in 1946 primary training matched biplane N2S.

and report to the commandant if there is any change that is detrimental to flying.

When an instructor is satisfied that one of his students is far enough advanced in the above items of training to fly alone, he will notify the officer in charge of Flying School, who will take one or more flights with the student; if he is then satisfied with the student's ability and the medical officer reports him physically fit, he will be permitted to fly alone and go ahead with elementary flying.

6. Elementary Flying—During this period the student will make only such maneuvers and stay in the air for such periods as are directed by his "flight orders." The following will be covered in order:

Get-aways, straight courses, turns and landings into the wind; good weather.

Figure eights and landings with the wind; good weather.

Spirals; good weather.

Higher altitude flying; good weather.

Rough weather flying.

Course by compass.

Endurance flights.

During this period, when sufficiently advanced in the shop course, the student will have an aeroplane assigned to him for care, preservation, and keeping its logs and records. When his instructor and the officer in charge of the Flying School are satisfied as to his progress in elementary flying and as to his practical and theoretical knowledge as shown by the examinations he will be permitted to go ahead with the advanced flying under the supervision of the officer in charge of the Flying School.

7. Advanced Flying—

Starts from catapult.

Landing in deep-sea waves.

Echelon of "Jay birds" (SNJs) shows equipment of early 1950s. Hard hats now in use.

Bomb-dropping practice.

Flying in formation.

Sending and receiving radio messages in the air.

8. Examinations—Written examinations in theoretical and practical aviation will be given once each month, the questions being prepared by the officer in charge of the Flying School and approved by the commandant.

Marks will be given on a scale of 4.0 anything below 2.5 being unsatisfactory. Any student whose average is unsatisfactory in any subject at the end of any month will be reported to the department and may be recommended for detachment. Monthly marks will be averaged, and the result will be the official mark for the student naval aviator's course. After passing the final written and practical examinations, and after having had at least 50 hours flying, students, upon recommendation of the officer in charge of Flying School and approval of commandant will take the flying tests prescribed for qualification as naval aviators.

9. Flying Tests for Qualifications as Naval Aviator—The tests will be conducted by a board of not less than two naval aviators, designated by the commandant, and the following will be done, in the order named:

Climb to an altitude of 6000 feet, as shown by a recording barograph, and glide with motor idling to a normal landing within 200 feet of a mark previously designated by the board; horizontal flights to be resumed twice during the descent, but not within the last 1000 feet.

Make a spiral glide with motor cut off (stopped) from an altitude of 3000 feet, as shown by a recording barograph, and make normal landing within 200 feet of a given mark previously designated.

The modern look is apparent in this flight gear of late 1950s.

Make a landing in a seaway where height of wave is at least 3 feet, without damage to any part of the aeroplane.

Make a straight course and return between two objects not less than 5 miles apart in a wind of not less than 20 miles per hour and not more than four points forward or abaft of the beam, in order to demonstrate ability to maintain a given course.

Demonstrate to the satisfaction of the board, ability to fly in very bad weather.

Start a flight from the catapult after personally making all adjustments.

Upon the completion of these tests the officer will be designated a naval aviator and be eligible for further training in aeronautics to qualify as a Navy air pilot or as a military aviator by taking a course at the United States Army Aviation School.

Course of Instruction for Quartermasters (Aeroplanes)

1. From among those airmen having had at least three months' service as such, and whose Navy ratings are CPO and PO first class, of the seaman branch, shall be selected the requisite number to take the course of instructions for training as quartermasters (aeroplane).

The flying instruction shall be the same as that given student naval aviators.

Upon completion of the course and passing the required mental examination, and when the airman has had 50 hours flying, if recommended by the officer in charge of Flying School and approved by the commandant, he shall take the flying test prescribed for student naval aviators. If successful the airman is now given a quartermaster's (aeroplanes) certificate.

Short Snorts

Safety is what YOU make it.
Know and follow all safe procedures.

Listening In

Believing that passengers like to know what's going on in the cockpit, many airlines pipe the flight crew's radio transmissions into the cabin PA system thus allowing the passengers to listen-in.

A recent issue of the British "Flight International" included a letter written by a lieutenant in the Royal Navy. We pass his words on to you:

"The passenger is as likely to be surprised by what he hears over the R/T as to be interested. This was borne out when a pilot in Australia allowed the passengers to listen in to his controlled approach to an airfield. The excitement of the approach had made him forget that he was 'live' to the cabin, and as he rolled to the end of the runway he informed the copilot and some 30-odd passengers that . . . 'What I want now is a cold beer and a hot woman.' The hostess, who was already walking toward the forward cabin, broke into a run to remind the pilot that he was still talking to the passengers when someone in the second row called, 'Don't forget the beer!' "

Punctured Skyhawk

The need for a thorough FOD walkdown on a runway following any aircraft landing incident was emphasized recently by an A-4C mishap.

The Scooter was rolling on takeoff when its starboard wheel picked up a metal fragment from the runway and slung it through the fuselage.

O&R estimated later that this cast iron fragment was either an F-8 or TF-9J brake sub-assembly.

Station officials believe the fragment was overlooked following a landing incident that had occurred between regularly scheduled runway sweepdowns.

What's in a Name

A new lightweight drone under development for the Marines is to be called "Bikini." According to a press release it is so named because of its simplicity, economy and ability to cover strategic areas.

In-flight Engagement

The EA-1E was slightly fast and flat as it took the cut during a night carrier landing. The pilot overrotated and then added power just prior to arrestment, thinking he had boltered. He chopped his power immediately after feeling the in-flight engagement.

Subsequent touchdown was in a near three-point attitude. The aircraft nosed over during runout of the arresting gear, causing the propeller tips to strike the flight deck. Damage was slight.

The cause of the incident is attributed to power being applied during arrestment in conjunction with the overrotation of the aircraft just prior to touchdown. The fact that the EA-1E has a pronounced tendency to nose over during any arrested landing is also considered a contributing factor.

Flying Slush

THE duty runway of the Alaskan base had been plowed just before the *Neptune* taxied out for takeoff.

An innocent looking ridge of slush and ice had apparently been overlooked by the plow boys. It lay perpendicular across the runway and proved to be six feet wide and four inches deep.

On takeoff roll, the SP-2H hit this area doing 60 knots. Vibrations began immediately, becoming severe during climbout. Rate of climb was noticeably lower than normal.

Eyeball inspection revealed that the radome had collapsed and was leaving the aircraft piecemeal. After conducting a slow flight test at altitude, the crew landed successfully.

Although radome fatigue may have been a contributing factor, it is doubtful, because the radome

looked sound when inspected during preflight.

It is believed that the nose wheel threw up slush and ice chunks with sufficient uneven impact force to cause failure of the radome.

Overpressure

WHEN an F-8 reached about 110 knots on takeoff roll, the pressurization system started to fog the canopy. At liftoff there was an explosion. The port windscreen had blown away, the glare shield on the left side peeled back, the center windshield cracked and numerous instruments on the port side of the instrument panel were inoperative.

After dumping and burning down, the landing was made by flying formation on another aircraft and with the aid of the squadron LSO.

Postflight inspection of the aircraft revealed masking tape located over the static air vents: the aircraft had been washed the previous day.

The pilot failed to check the static vents, and, with them blocked off, an extreme overpressization condition developed on takeoff.

The plane captain signed off the daily preflight sheet, indicating that the static vents were free.

"The trouble with working like a horse is, you're too tired to do anything at night but hit the hay."

Needless Repair

AN F-8 was started with the jury struts installed. The wingfold handle was in the SPREAD position and when hydraulic pressure increased to 3000 pounds, the wingfold rib assemblies failed. It took 420 direct man-hours to get the airplane ready to fly again.

The pilot did not make a complete check of the switches, levers, etc., in the cockpit prior to starting the aircraft.

The plane captain did not make a complete check of the cockpit.

During the previous night the maintenance crew lubricated the wingfold levers and it was believed the wingfold lever was left in SPREAD when the wings were actually folded.

Flight Hazard

After 45 minutes of flight at 3500 feet, all air pressure instruments in a C-1A ceased to operate. Outside air temperature was – 12°C. Weather was clear.

The copilot suspected a blocked static line and broke the glass on his altimeter. Readings on all pressure instruments was regained.

There was a sudden drop in outside air temperature just prior to the first indication of pressure instrument difficulties. One quarter teaspoon of water was blown from the static line after landing.

Diagnosis: Water in static line froze.

NIGHT DITCH

TRUTH and CONSEQUENCES

We had been airborne for nearly three hours on a six-hour ASW training flight. The sun had gone down and it was black-as-pitch out. The hop was going well under the circumstances. With the exception of the plane captain, my crew was a bunch of young inexperienced lads, but they were sharp and eager to learn.

Tooling along up there at 7000 feet in the blackness was kind of peaceful. We were only 20 miles off the coast and had a good bird. It looked like a no sweat touchdown in three more hours.

"Hey, Lew, there's a fire aft," yelled Bud, my copilot. "What the *'&"!" Simultaneously an ICS report, then a verbal report from the plane captain

confirmed the bad news. I snatched a quick look over my shoulder—waiting for the mental wheels and gears to start turning—and sure enough, the entire afterstation within my sight was engulfed in bright yellow flames. The adrenalin really started pumping. I told Bud to get a Mayday out and then switched my IFF to emergency.

Several thoughts raced through my mind in those first few moments. The possibilities of explosion or structural failure were very real. Since I might not have time to get down for a ditching, bailing out seemed to be the logical choice if the fire could not be extinguished. While waiting for the plane captain to report on firefighting results, I warned the crew to standby for bailout.

"Sir, we can't put the fire out," announced the plane captain. "Those little fire bottles! I emptied three on it!"

I had already put the gear down in anticipation of having to bail out through the nosewheel well. With mixed feelings, I ordered the crew to begin bailing out. I disliked having to use the nosewheel route for bailout but the afterstation hatch was inaccessible due to the fire.

"I can't find my parachute harness, sir!" You guessed it—the plane captain again. Nothing but bad news from this fellow today. My plans had to change now. "Pilot to crew, I'm gonna ditch! If you want to bail out, get with it now! Otherwise, strap in and hang on!"

"Everyone wants to ditch, sir," shouted the plane captain. Fine! At least we got that settled. I left the gear down, put out full flaps and pulled the power back to 18 inches. We started dropping like a rock but I still thought we'd never get down in time.

By now we were transmitting all ICS traffic on UHF. This is what the chatter sounded like on the tower tape at home base.

"Okay, Bud, the wind's at 330 . . . I'll be ditching into the wind. Passing through 3500 feet.

"Leave some power on it! I don't think we can make it. Man, that afterstation is full of flames—it's getting pretty bad.

"We got 2000 feet to go . . . no, don't cut the engines! I want some power!

"Okay, pull out the astro hatch—get it out—oh yes, I do—I do want landing lights—landing lights coming on—landing lights going on.

"Passing 500 feet now—get the gear up—put the props up and give me 27 inches. That's it.

"200 feet now and leveling off . . . 120 knots. Easy does it from here on. Gotta slow it down a bit. Okay, we're at 100 feet, settling . . . 100 feet . . . hang on!"

We contacted the water at about 100 knots, power-on, nose high on a heading of 300. I felt a bump aft, then nothing, then a very solid steady deceleration. I then pulled the magneto switch and hit the crash bar. Water was sloshing up over the cockpit seats as I climbed out through the overhead hatch.

I jumped in, swam around to the outboard side of the port engine and climbed onto the partly submerged wing. Everybody got out okay, but the small Mk IV raft had been left inside on the flight deck. I told someone to pull the Mk 7 raft release handle next to the astro hatch and then cleared everyone away from the aircraft. I could smell gasoline, smoke and steam. After swimming off a bit, we took another head count. Then someone spotted the Mk 7 raft and we started swimming for it. After boarding, we took another head count and checked for injuries. The plane captain was obviously injured.

Looking up, we could see the lights of several aircraft circling our position. I fired tracers from my .38 revolver at intervals and had the crew set off flares periodically.

A Coast Guard HH-52A helicopter arrived in about 30 minutes. He illuminated us on two successive passes, then made a landing attempt, approaching from the east. The chopper's tail rotor struck the water and it apparently went out of control. We almost got hit. It recovered as we paddled like crazy to get clear and we saw it set down in the water about 30 yards away from us. Shortly thereafter, we saw and heard someone in the water—it was the helicopter crewman who had been thrown out during the chopper's gyrations. We paddled over and picked him up.

A second helicopter arrived a few minutes later and lowered a basket into the water. Three of my crew, including the injured plane captain, were picked up and carried to the beach.

Then a third chopper (another HH-52A) landed close alongside the raft and we paddled over to it for the pickup. At this time, the first chopper was still afloat, nearby, taxiing around in circles, maintaining rotor RPM to keep from capsizing. (*The helicopter received overhaul damage during subsequent salvage operations by surface units. The pilot was not injured.—Ed.*)

The elapsed time between initial discovery of the fire and subsequent ditching was five minutes.

In retrospect, the final decision to ditch was fortunate because only six chutes were accessible to the crew of eight—the others being stowed aft of the

fire area.

Smoke, heat and the close proximity to open flames rendered the radio compartment ditching stations unusable. Thus, three of the six men on the flight deck were not in designated ditching stations. Such was the lot of the plane captain who was sitting on the flight deck entrance hatch. He suffered serious back injuries when this hatch was blown open violently on impact. The hatch was forced open by water forces rushing unobstructed (the bow compartment door was left open) through the nose tunnel. (*Service Changes 604, 603 and 603A making this location a ditching station were not applicable to this aircraft.—Ed.*).

Apparently life jackets and parachute harnesses were not stowed in readily available predesignated locations. Four men were not wearing hard hats upon ditching. Another was not wearing a hard hat or life jacket. Undoubtedly the necessary haste with which ditching preparations were carried out on an overcrowded flight deck contributed to some of these oversights or omissions. The general low experience level of the crew was another possible factor.

The pilots evacuated the cockpit without difficulty. Egress from the flight deck presented problems for some of the crew. The narrow astro hatch just barely accommodated two men who had forgotten or lacked time to remove their chest chutes. One had released the Mk 4 life raft from its position on the wing beam and placed it in his lap prior to ditching. During the subsequent scramble to get out, the raft was dropped and never recovered. The radar operator had the most difficulty. He was wedged in his seat by some unknown obstacle (possibly the missing Mk 4 raft) and was unable to get free before the water was up to his chin. The plane captain did not become aware of his injury until he was outside in the water.

No one saw the Mk 7 raft clear the aircraft. Two men tried to release it with outside handles. Only the copilot remembers pulling one of the inside release handles. The salt water immersion switch was not hooked up.

The raft was first sighted about 40 yards from the aircraft. Two men overtook it in a hard 3 to 5 minutes swim. With a 25-knot wind on the surface, it is doubtful that the raft could have been caught had not its survival gear and sea anchor been trailing over the side. The injured plane captain required assistance in reaching and boarding the raft. All others were taken aboard without difficulty.

The cause of the fire was undetermined. It appeared to be coming from beneath the floor boards, aft of the galley stove, between the decking and three oxygen bottles. Flames were shooting out horizontally in a 45-degree fan shape along the deck and were 12 to 18 inches in length. A blow torch effect indicated the flames may have been under pressure.

The galley stove, pyrotechnics and oxygen system were given consideration as possible sources of the fire. The plane captain stated vehemently that the stove was turned off prior to flight and was not used, nor were there any materials on the stove during the flight. Both the pilot and plane captain verified the correct stowage of pyrotechnics and indicated that none were used or tampered with during the flight.

The Board gave serious consideration to the possibility of spontaneous combustion in the presence of oxygen. It believed that spontaneous combustion could have occurred at normal temperatures only in the presence of oxygen. Rags soaked with hydraulic fluid or oil may have been present; however, it is hard to imagine that sufficient pressure could have been generated to cause spontaneous ignition without additional heat or oxygen.

The Board felt that the pilot analyzed the seriousness of the emergency correctly and his final decision to ditch was correct. It also pointed out that a serious lack of training and safety in accordance with standardized ditching procedures was clearly evident.

It was further recommended that: the bilge area under the plywood decking of P-2E aircraft be inspected on each periodic inspection; safety belts be installed at the plane captain's ditching station aft of the 186 panel; and that additional fire fighting equipment be provided in the aft section of the P-2 aircraft. Finally, it was suggested that log book entries be required on *all* oxygen tubing rework and replacement.

SEA KING SALVAGE

On 3 February 1963 an SH-3A suffered an engine failure and landed in the sea. The helo was not equipped with flotation bags and had tipped over and was floating inverted. USS KEARSARGE (CVS-33) arrived on the scene and, after a 3½-hour salvage attempt, the bird sank.

Spirits slightly dampened by the unsuccessful attempt, KEARSARGE'S Weapons Department started making plans for recovery of downed helos, either inverted or upright. Extra flotation gear was gathered up and a special hoisting strap was fabricated aboard ship.

When another SH-3A went in the drink on the night of 30 June 1964, KEARSARGE was ready.

The helo had experienced a gear box malfunction 35 miles from the carrier and landed in the water. The pilot activated the flotation gear to maintain buoyancy and kept the rotors turning to maintain stability.

The intention was to remain in this status until the carrier arrived, then lift off and attempt a deck landing. A destroyer was directed to stand by the helo for any assistance needed while another SH-3A remained overhead providing "on top" marks, illumination and communications relay.

Before the destroyer arrived, the first helo had shut down because one of the rotors had struck the water.

Upon arrival of the destroyer, the helo crew inflated their life raft, abandoned the aircraft and were hauled in by rescue line to the destroyer.

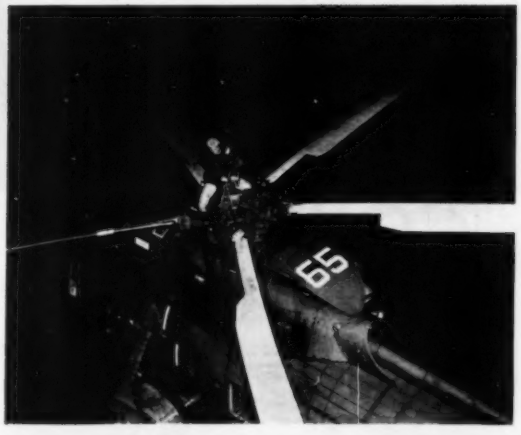
It was a dark night with a sea state of 3-4 and a 15-25 knot trade wind. KEARSARGE approached the *Sea King* with the true wind on the port beam. When the helicopter was approximately 50 to 100 yards abeam, the ship was stopped dead in the

water and allowed to drift downwind toward the aircraft. Once alongside, the ship was not maneuvered due to possible danger to the swimmers. With the aircraft on the lee side of the ship, the carrier's set kept the helo alongside.

Linehandling crews with 50 fathoms of 5 inch line were positioned on the No. 3 elevator and aft of the ship's crane sponson. The Engineering Department provided lighting aft of the crane sponson to forward of No. 3 elevator.

A rubber raft equipped with a standard SH-3A hoisting sling and a tending line was launched from No. 3 elevator. Swimmers entered the raft via a Jacob's ladder and paddled to the helo.

With the ship's set keeping the helo alongside and the extended rotor blades fending the bird off the ship's hull, a stern line was attached to the tail wheel oleo by a swimmer. A bow steadying line was attached and the helo was brought into position under No. 3 elevator. Since the area was well lighted, another swimmer climbed to the rotor head and attached a standard hoisting sling. A steadying line from the sponson was passed to the elevator and the chopper was pulled away from the side of the ship, around the crane sponson and into position under the hook.



Top: Rigging the hoisting sling. Bottom: Positioning the helo on the no. 3 elevator.

No. 3 elevator was then lowered and the aircraft was held under the crane while a swimmer threaded the tripping line through the eye of the hoisting sling.

A line handling crew on the crane tripped the hook through the eye and the helo was hoisted clear during a period of swell cancellation. Bow and stern linehandling crews dampened the roll induced swings of the helo with steadying lines.

The chopper was brought into position over no. 3 elevator, actuating pins were pulled, the landing gear lowered and the aircraft was set down on its gear. Rotor blades were folded and the aircraft was thoroughly washed with fresh water.

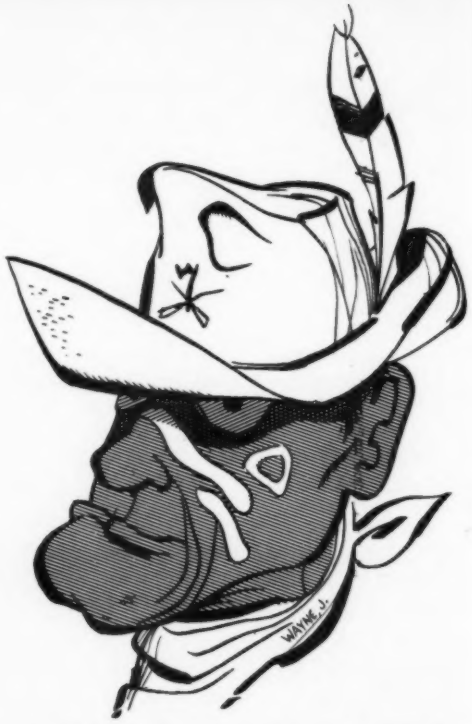
Avionics equipment was removed and treated with corrosion preventative CRC-2-26. Sound insulation material and floor boards were removed and the airframe was treated with non-avionics corrosion preventative CRC-3-36 using a low pressure spray.

The following recommendations are offered concerning any future recoveries of floating helicopters:

- Inflate the flotation bags.
- Leave rotor blades extended to fend the helo away from the ship's hull.
- Set the rotor brake.
- Close all hatches to enhance buoyancy.
- Employ a hoisting sling comprised of materials with a minimum test strength of 70,000 lbs.
- Do not employ sharp instruments, grapnels, boathooks, etc., when handling the aircraft. Puncture of the flotation bags will surely cause the helicopter to rotate inverted and complicate the recovery.
- Utilize the Master-at-Arms force to keep the deck edge clear of spectators. Line handling crews may have to move quickly up and down the sides; spectators add an unnecessary impediment.
- Keep departmental responsibility simple as possible to insure against responsibility conflicts.

All ships operating with helicopters should consider the problems of recovering their downed birds. Don't let a drowning helo catch you unprepared.

PROFILES in COWARDICE



Every one writes about heroes: giants who strode the earth in those days, boys with fingers in dikes, tall men in the saddles, little old ladies shouting, "shoot if you will this old gray head." That is all very well and good, but highly discriminatory. It is high time our good smart red-blooded American cowards got a little publicity.

Sure, Custer said, "Don't take any prisoners, boys,' but one of his troopers said, "Anybody got any red paint, ugh?" And the tough Marine sergeant rallying his men shouted, "Who the h..... wants to live forever?", but a tiny voice answered, "Like John Wintrop Rasmussen, Junior, that's who!" Who can rebut the simple logic of such an answer? After all, our cavemen ancestors learned to think with their feet when a sabertoothed tiger appeared, and had they not, then there would be mighty few of their descendants flying airplanes today.

Bravery, as such, is nothing to be sneezed at. That is, unless you are allergic to the stuff from which hero medals are made. Foolhardiness, recklessness, overconfidence, playing-with-fire-ness—ah!—my friends, these are other matters! *Useless* sticking of fingers in the dike will gain you, on one end, a muddy hand; on the other end, a tremendous cold bath in the Zuyder Zee.

One of our jet training squadrons had a plane downed by a pilot after a flight because of an erratic fuel meter. Another pilot checked the aircraft out and downed it because the fuel meter read fifteen hundreds pounds too high. A third pilot accepted the plane with the remark, "I've flown it before, I know how it acts." He took his student aloft for instrument training. After flying in the local area for some time he returned to the home field for the student to practice radar approaches. They made six approaches; the last, ironically enough, a simulated low state to a touch-and-go landing. After completing the approach the instructor pilot chatted with the radar controller a moment concerning the approaches, then switched to the tower for landing. On downwind he called "low state" to the tower, then flamed out as he turned on short base. His student ejected safely, but the instructor was too late and too low and was killed. The pilot who had earlier rejected the aircraft was watching the crash from the ground.

By LT B. O. Bibb

My grandfather told a story about shooting a bear when he was a young man, then finding that he had only wounded it. He trailed the bear into the woods until he caught up to it, and the bear turned at bay with his back to a large tree. Grandad said he had often read stories of such noted woodsmen as Putnam, Boone, *et al*, finishing off a wounded bear with a knife to save ammunition and just for the bazz of it. So, he thought he would do the same. He stripped off his coat, parked his rifle, got his knife ready, and advanced on the bear. The bear reared back against the tree and waited with his arms spread and his fangs bared. Grandad said he came to within ten feet of the bear, then stopped and said to himself, "I've got a perfectly good rifle back there. What in the world am I doing?" Forthwith, he retrieved his rifle and shot the bear thoroughly, not receiving so much as a single scratch in the process. My grandfather was a man of high intelligence.

The pilot of a certain A-4 should have taken lessons from my grandpop. This was the lad who returned to his home field hard on the heels of a thunderstorm, only to find the long runway closed with an A-3 in the arresting gear, the other runway with arresting gear also fouled by an entrapment, and one short runway remaining that had no arresting, abort, or overrun gear. A big master jet base lay just ten miles to the west, and the control tower advised him to proceed there as the remaining runway was wet and slick. He said, "I won't need arresting gear, this is my home station and I know the runway characteristics." He landed, hydroplaned down the runway and off the end, and came to rest in truly pitiful condition. Meanwhile, to the west, thirty-six thousand feet in four runways were a-wasting.

As you can see, one of the big problems in the business of flying is how to go about instilling a bit of *controlled* cowardice in some of our pilots. True, bitter experience will sometimes transmogrify the reckless spirit into something more cautious, but that is the expensive way; besides, along that path lies non-survival in some cases. If we could just vaccinate each pilot candidate with a small dose of permanent type serum made from chicken hearts, we would have to train fewer replacement pilots. Then lots of good things would happen, like disappearing aviation clauses in insurance policies, for instance.

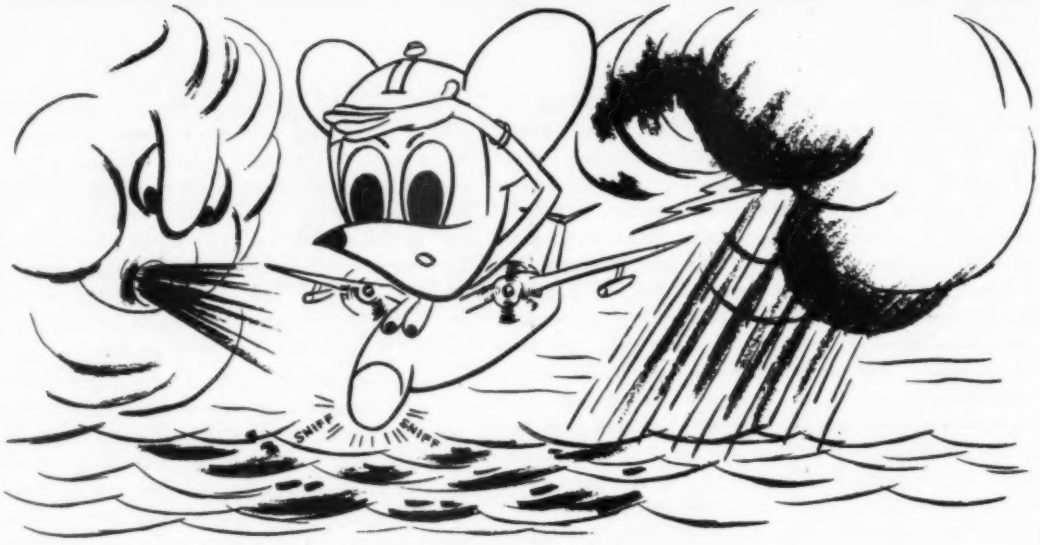
Murgatroyd Plootch followed his section leader down on a section penetration in strict IFR conditions, flying as tight a wing as a Second Looie could in VFR. Came minimums, and no ground contact. The section leader went down another hundred or so for a look, but Murgie took it up and away on a missed approach. After a decent interval, cowardly Murg married the brave section leader's rich widow, and he hardly felt any guilt at all when she bought him an underslung four-barreled Jaguarooni for a wedding present. *C'est la inschourantes*, as they say in *la belle Franzwah*. And *c'est la terrain clearance*, as they say in aircraft accident reports.

In the seventeen eighties Darby Ingram was captured by Indians as he travelled alone down the Ohio River by canoe on his way to New Orleans. History does not record why such a rank and noted coward was taking this risk. Nevertheless, we do know that he was captured by a particularly fierce roving war party, taken to their village in bonds, and there tied to a stake for torture. Squaws proceeded with the usual indignities such as inserting splinters under his fingernails while the braves made preparations to roast him over a slow fire. This eventuality never occurred, however, for Darby responded to the squaws' ministrations with such tremendous whoops and screams of fear and pain that the entire village surrounded him in admiration. Vibrations from his vocal exploits brought down showers of pine needles and broke at least one iron pot hanging over a nearby fire.

Such talents could not go unrecognized. Darby's captors cut him loose, doctored his minor wounds, and adopted him into the tribe. He served the tribe with great distinction for years, for each time his tribe was attacked by other tribes, his screams and bellows of unmitigated terror succeeded in putting the attacking force to flight in the belief they had mistakenly happened on demons. As a result, the tribe waxed so rich and peaceable that they offered no resistance to settlement of their lands by frontiersmen, and Darby Ingram was again heaped with honors, this time by his own people.

With this prime example of the rewards of being scared in front of him, the aviator should take heed. Perhaps screams are not necessary in being wary of airplanes, but the thing that engenders screams should be considered with intelligence. Don't be afraid to be afraid. Blessed are the faint in heart. Never place your head in a tiger's mouth unless you have a spare one at home. Mind these maxims, for remember—a thankless airplane is sharper than a toothless serpent, and therefore thy days will be long.

Sholem aleichem, aviationers.



LAND HO!

We were holed up at NAS Fogbank waiting for a hurricane to blow through so we could go home to NAS Eastcoast. While snugly planted in our quarters, dreaming of past hurricane parties, we received word that the operations duty officer wanted us to file a flight plan and take off immediately for home. A new weather advisory placed Fogbank squarely in the hurricane's path and the station could not hangar our bird.

Meteorology advised us we could circumnavigate the storm by flying due south from Fogbank for 800 miles, then vectoring west to the coast. Weather enroute was to be moderately turbulent with 40 knot westerly winds and varying cloud layers. All this information considered, we estimated a nine-hour hop and put 12 hours of fuel aboard the *Marlin* to be on the safe side.

We took off at dusk and noted that everything was functioning normally except the radar. The first two hours of flight were uneventful except for periods of severe turbulence (moderate turbulence? the boys from meteorology should be here). Loran was working and we were sending our position reports to New York Overseas Radio. We were in UHF contact with another patrol plane which departed Fogbank three minutes ahead of us on the same route but at a different altitude.

Three hours out the weather really got sour. Turbulence increased appreciably in intensity, loran got fuzzy, and the thunderstorm activity around us made the trailing wire antenna unusable. We lost contact with the other plane and New York Overseas Radio. It became increasingly difficult to maintain altitude with the plane dancing all over the sky like a kite. Solid IFR conditions made celestial navigation and drift readings impossible.

No sweat thus far. All we had to do was turn west at 800 miles out. Then we couldn't possibly miss the east coast of the United States.

Using the forecast winds we held to our southerly course and at 0200 made the long awaited westerly turn, estimating NAS Eastcoast at 0500. We still had no communications or loran.

At 0330 we called for an ADIZ penetration, guesstimating our ETA at their boundary so as not to get clobbered by the stove-

ANYMOUSE

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. As the name indicates these reports need not be signed. Forms for writing Anymouse Reports and mailing envelopes are available in ready-rooms and line shacks. All reports are considered for appropriate action.

— REPORT AN INCIDENT, PREVENT AN ACCIDENT —

pipes. Well, they didn't answer so we switched on our IFF and cranked up the birddog (wishful thinking in this weather.) Amazingly enough, the birddog seemed to be working and we picked up a faint signal that sounded like Navy Eastcoast bearing 30 degrees left of our heading. We altered course and as luck would have it, flew right into a king-sized thunderstorm.

Still worried about the Defense Zone ahead, we kept trying to talk to the ADIZ people—no luck on CW either.

At 0430 we took her down to look at the surface. At 300 feet with the landing lights on all we could see was swirling water. There was at least a 75-knot wind blowing.

At 0530 we took her down again. Same story—much water.

We were lost!!

I kept thinking about "Wrong Way Corrigan." The fuel situation began to look threatening so we throttled back and leaned them down to the fumes. We switched IFF to Emergency and broadcasted our plight to the world on 500 kcs. Still no answer.

Past experience with the birddog taught us not to rely on it in this weather so all we had to go on was one very hazy loran fix. I sat the nose on 270 degrees and we strained our eyes for land.

At about 0600 our prayers were answered. We spotted the outline of a cape through a hole in the clouds. No one recognized it, but one thing was certain, it was land.

I got on the FAA airways reporting frequency and made an appeal for anyone to answer. We got a weak, scratchy answer that identified itself as Wilmington Radio. We couldn't raise him again and didn't have the vaguest idea if he was Wilmington, Delaware or Wilmington, North Carolina. Our destination was about midway between the two. My copilot decided that the voice had a southern accent, so armed with that accurate bona fide information we turned north.

Shortly thereafter we passed over an air station I recognized as MCAS Peach Peak. I calculated that, barring headwinds, we could make it to NAS Eastcoast on the fuel we had. I was right, we landed at our destination at 0900.

It was quite a hop. We left Fogbank with 12 hours of fuel and landed at Eastcoast 13 hours later. Weather had pushed us 500 miles east of our southbound course from Fogbank. The big mistake was all mine when I headed blindly on 270 degrees thinking the east coast runs north and south rather than northeast to southwest.

Lucky 13

Launching in an F-8E on a Sidewinder research and development hop, I made an afterburner takeoff and climbed out to 50,000 feet where I commenced the project run. Almost immediately I noticed the first signs of trouble with the old reliable J-57. With full afterburner, the cockpit instrument readings were unbelievably low with 83 percent RPM, 320° TPT, 4200 pounds fuel flow and a 1.7 pressure ratio. Upon immediate deselection of burner, all instrument readings remained the same with the exception of the pressure ratio which dropped to 1.5.

Before a switch to manual fuel control could be effected, the engine flamed out. An immediate relight in manual fuel control relieved the adrenalin flow and solved my problems.

In view of the situation, I decided to return to home plate, about 30 miles away, rather than continue with the hop.

From the time of the turn for home to the time that I set up the high key position at home plate, I had seven more flameouts in manual fuel control at various altitudes, indicated airspeeds, and power settings. During this time, I returned to normal fuel control five times—with negative results.

I commenced a precautionary flameout approach at home plate. Being fully aware of NATOPS flameout procedures, and having over 1000 hours in F-8 series aircraft, I decided to continue my approach until a flameout occurred on the safe edge of the ejection envelope.

Within the pattern, from high key to touchdown I had four more manual fuel control flameouts, all at various power settings. In each case I got an immediate relight, with no interference to my flameout approach other than the flailing of my two arms.

Landing was uneventful, but before the sputtering J-57 could be manually shut down on rollout, there were several compressor stalls and another flameout. During the total flight time of 17 minutes, 13 flameouts had occurred.

Postflight maintenance discovered the flameouts resulted from engine fuel starvation due to a blown-out rubber O-ring (part number MS-9021-218) which seals the main fuel control to the fuel flow transfer tube. Thus, the majority of the fuel was spraying into the aft engine bay, with only enough fuel going to the engine to maintain momentary engine power.

Incidentally, the defective part costs a nickel. . . .

Reader Questions Headmouse Answers

Shearwire vs Lockwire

Dear Headmouse:

In recent months here, there has been a running argument between AMD electronics technicians and Quality Control as to type of wire to be used on internal electronic equipment in the HU-16 aircraft. Possibly the argument concerns all models.

It appears that aluminum shearwire is best, particularly in the event it becomes necessary to lighten the aircraft; precious time could be lost searching for tools to cut steel lockwire.

Prior to reporting to my present duty I completed a tour in a SP-2H squadron where shearwire was used exclusively for securing internal electronic equipment.

Yet, in my present squadron, the Q. C. head states that until shown an instruction authorizing the use of shearwire, "no soap." I can see his point as he researched the instructions and can find nothing dealing with this matter.

Do instructions exist relating to the use of aluminum shearwire? Are there different instructions for each model aircraft? In my opinion the use of shearwire will greatly facilitate the installation and removal of this equipage as well as prove safer.

ANYMOUSE

▶ The answer is yes to both of your questions—instructions do exist—but the number of them, their dates of issue and terminology used in each seems to muddle the issue. Therefore, interpretations vary among operating activities.

Relative to your first question here are a few of the more pertinent instructions:

(1) Military Standard 33540, April 1955, "Safetywiring, General Practices for"

(2) NavAer 01-1A-505, 1 Sep 1956, "Handbook of Installation Practices for Electric and Electronic Wiring"

(3) NavAer 01-1A-8, 15 Dec 1959, "Structural Hardware Manual"

Concerning your second question, instructions are contained in virtually all of the maintenance manuals for specific model aircraft. But in most of these the instructions are too general to be of value. Likewise, the Illustrated Parts Books.

Take the HMI for the HU-16, AN-01-85AB, Rev. of July 1961 for instance. Paragraph 34-965 states, "Receivers, transmitters and other units mounted on racks are installed by sliding the unit into place, tighten clamping screws or collars and 'safetywire' them in place. Others simply say "safetywire for security." Another says the general rules to be observed when selecting "safetywire" is that the choice must be made in accordance with temperature, atmosphere and service limitations as outlined in applicable specifications.

Herein lies the rub. BuWeps in letter Aer-MA-413/28 dated 12 March 1959 to NASC (pg 16 of June 1959 issue of APPROACH) states that hereafter the term "safetywire" will be discontinued in favor of the term "lockwire" to distinguish between "sealwire" and "shearwire," all of which may serve safety purposes. The writers of some of the subsequent manuals apparently didn't get the word and consequently continue to use the term "safetywire" indiscriminately.

BuWeps further stated that in order to reduce misapplications and the number of stock items only the following materials will be used:

- Lockwire—Inconel for all general lockwiring purposes; 5056 clad anodized aluminum wire for lockwiring purposes when the wire is in contact with magnesium.
- Copper wire will be used for "shear" and "seal" wire purposes only.

The situation is further complicated if one refers to NavAer 01-1A-505. It states: "Electric connectors, emergency devices and other pieces of electric equipment are secured with 'safetywire' when specified in engineering drawings in order to prevent accidental loosening.

"Para. 13-6 *Material*—For se-

Unlike the flight control systems on present day high performance aircraft—the Naval Aviation Safety Center desires a continued feedback.

Has information in any Safety Center publication ever helped you to prevent an accident, avert an injury, or deal with an emergency in a better way?

If so, and you have not already informed the Safety Center, it is particularly desired and important that you do so. Such feedback is vital to all departments at the Center and for fiscal support of our safety research and education program.

System in all things should be aimed at; for in execution, it renders every thing more easy.

A worthwhile statement, in Washington's hand, from a letter to George Washington Parke Custis.

LIBRARY OF CONGRESS

curing coupling parts of AN connectors, use corrosion-resisting steel lockwire. For securing emergency devices, where it is necessary to break 'safetywire' quickly, use aluminum or copper 'lockwire'.

"Para. 13-1 '*Safetywiring Emergency Devices*—Use single wire method to secure emergency devices. Make sure that wire is so installed that it can easily be broken when required in an emergency situation." This section also directs attention to practices set forth in drawing MS 33540, also the use of aluminum wire AN 995-A31.

Yet, NavAer 01-1A-8 specifies copper .020-inch only.

At this point, you should be as confused as we are and your interpretations just as good as ours.

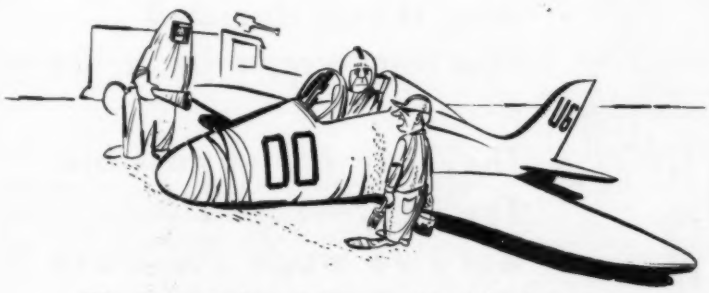
Concerning your opinion relative to the ease of installation and removal of shearwire, there is no doubt as to the merits of this practice. But if electrical AN connectors are lockwired with steel as per instructions contained in NavAer 01-1A-505, it would not be advisable to shearwire the clamping devices because wire cutters would still be necessary for unit removal.

Several cases have come to light which support your thinking. One SP-2H incident report lists 35 pieces of electrical equipment jettisoned to maintain single-engine flight, the coffee percolator being last. At least two flights jettisoned tool boxes first, thereby precluding the removal of several other items. So, we leave you with this thought—whether your outfit uses shearwire or lockwire—be sure your tool box is among the last items on the jettison bill.

Meanwhile this matter is being brought to the attention of the cognizant BuWeps authority.

Very resp'y,

Headmouse



"You want me to change it to ten or paint out the whole number, sir?"

Transmitting Around Ordnance

Dear Headmouse:

Please clarify the authorized use of security and operations radio transmitters in the vicinity of ammunition and explosives.

ORDNANCEMOUSE

▶ The need for such radios is recognized and their use is approved subject to the following restrictions:

a. Radio transmitting equipment shall have the following characteristics:

1. Frequency—above 30 mc.
2. RF Power Output—25 watts maximum.
3. Emission—Frequency Modulation.
4. Antenna—½ wave vertical, 50 ohm impedance.

b. Wherever squibs, igniters, or similar electro-explosive devices are stored, processed or transported, radio transmission shall not be allowed within 100 feet, except in cases of emergency.

c. Squibs, igniters or similar electro-explosive devices must be packaged in metal cans before being transported by equipment on which a radio transmitter is installed.

d. Except in case of emergency, radio transmissions shall not be allowed within 100 feet of magazines with doors open or within 100 feet of aircraft being armed.

Very resp'y,

Headmouse

Conversion

of an Eleven Oh Five

By Ens. William A. Yates

A CVA from Frisco
My 'Dream Sheet' did plead;
But NAS Norfolk
BuPers decreed.

I reported aboard
Gold bars a'flashin',
Soon to discover
That brown boots were the fashion.

No word of welcome
My ears did hear;
As airdales at the bar
Drank their cheer.

Struggling to the bar,
A tear in my eye;
A voice from above said,
'Boy, do you fly?'

I sat in the corner
Lost in despair;
And thusly decided
This tour would be a 'Bear.'

They say it's impossible,
The heart transplant;
But I've made the move
From ComCru to AirLant.

Forgetting the steam cycle,
Flagbag and bosun's mate;
In lieu of overshoot,
Undershoot and low fuel state.

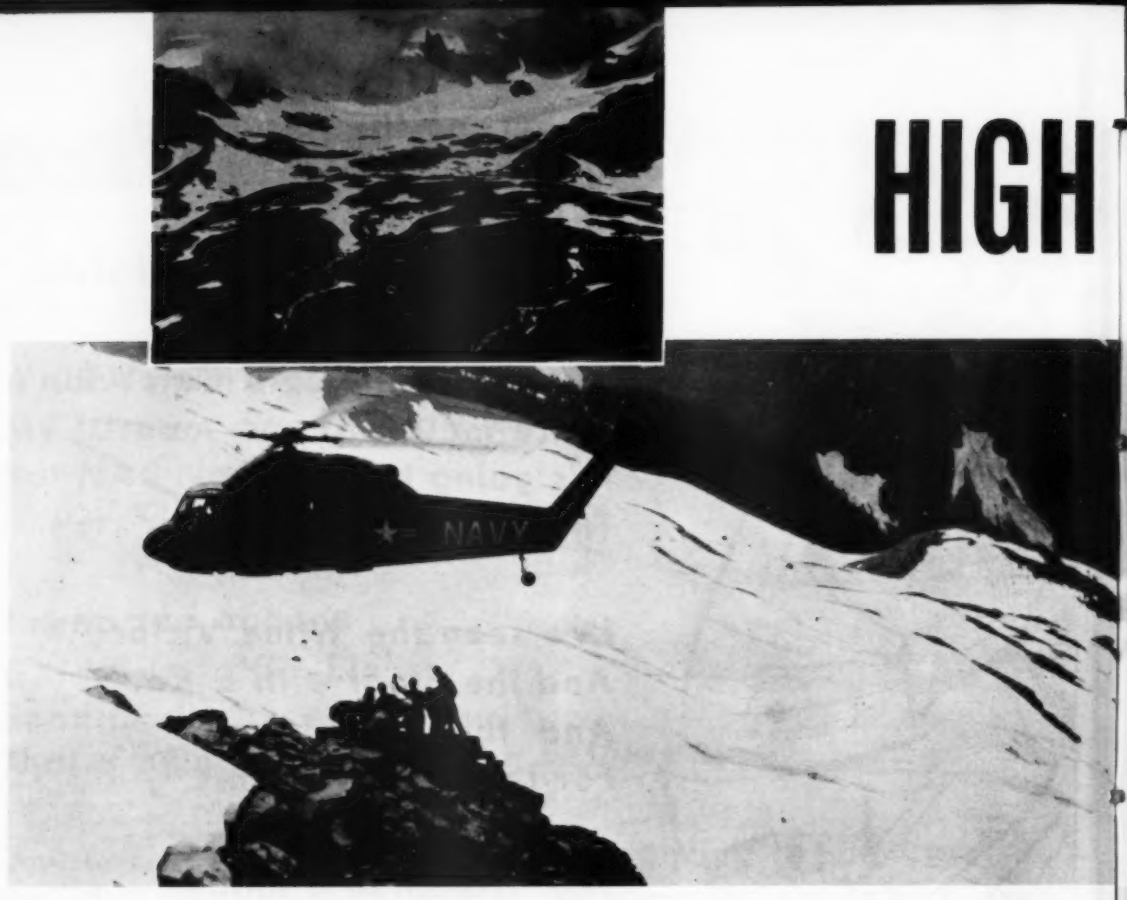
Hypoxia and 'Cold Cats' don't
Scare me a bit;
It's going to sea
That gives me a fit.

I've seen the Willie Victor
And the Stoof with a Roof;
And thank my bars
For the BuPers goof.

The transition is made,
I know not why;
Unless it's the satisfaction
Only flight can supply.

For the wings of gold
I certainly must strive;
And change that designation
To Thirteen One Five.

HIGH



On 7 August 1964 the NAS Whidbey helo was called upon to attempt the rescue of an injured mountain climber on Shark Fin Peak, a part of Boston Ridge on Mt. Eldorado. Many hours had been spent in this area training for various types of rescue missions.

The station UH-2B took off at 1930 and arrived in the accident area at 2010. All the peaks in the area had a heavy cloud cover starting at 7000 feet. Unfortunately the injured climber was at the 8300-foot level.

"We searched the area visible to us," the pilot reported, "with negative results. Then we climbed above the cloud layer to 9000 feet and surveyed all mountain tops with the same result.

"At about 2030 we departed the area and were then contacted by a P-2 from Seattle who relayed the message that we were to stop at the Marblemount Ranger Station to discuss possibilities with the local ranger. This we did, and at that time decided to attempt the rescue the next morning."

Next morning brought no luck. The weather had cleared during the night but clouds again covered the area by the early morning. Members of a mountain rescue crew could hear the helo as it flew over the general area.

"At 1300 we launched again," continued the pilot, "and arrived at the Ranger Station, picking up a ranger who knew the area. About 25 miles out we gained contact with the ground party who had started for the area the night before. We asked them to radio the middle party to release some day flares. This enabled us to spot the base camp people at 7000 feet. The injured climber was still in the clouded area at the 8300-foot level.

"Shortly thereafter the clouds lifted enough for

H ALTITUDE PICK-UP

us to see the upper party. They were perched on a small ledge cropping out from a nearby sheer cliff.

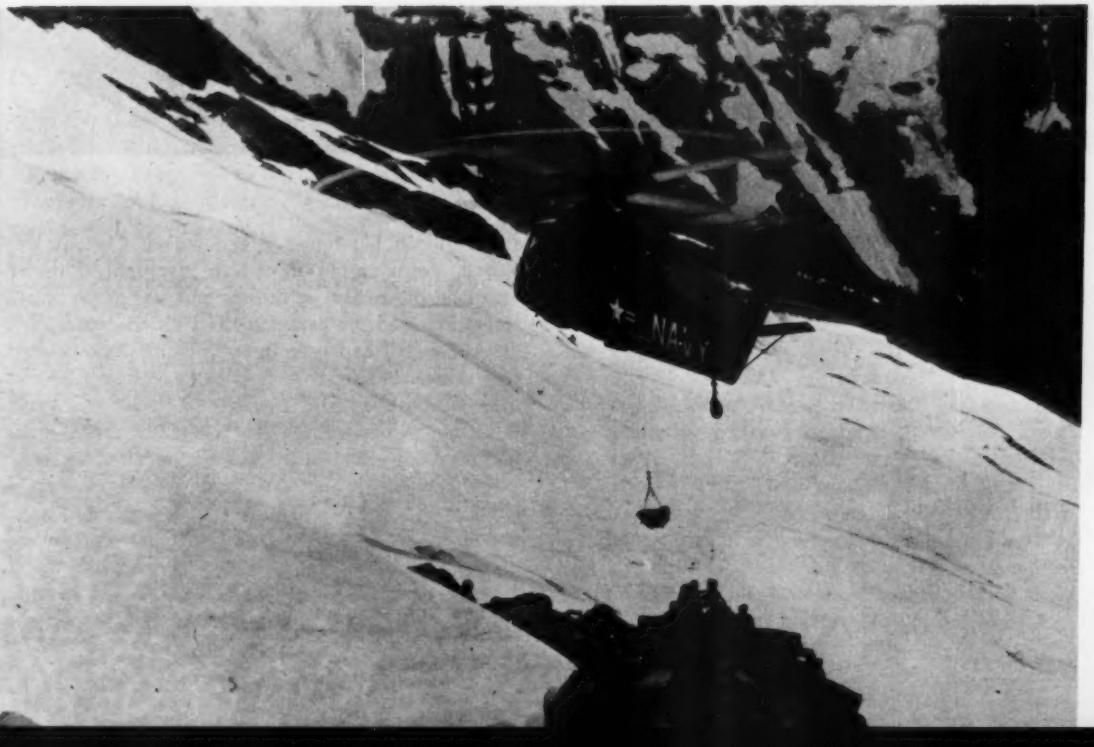
"Upon checking the area, it was almost decided that it was impossible to land or hover at that position, but we let out the ranger on a rock drift at about the 7000-foot level and dumped about a thousand pounds of fuel from the aft tank and made a pass.

"The first pass was unsuccessful as the helo sagged off nearly into the rocks; rotor RPM deteriorated and control became marginal. The next attempt was from 60 feet above the rock point with the cable extended. As we sagged downward the ground party snapped the litter to the cable. There remained enough power to pickup and swing the stretcher over the cliff. The crewman continued hoisting and swung the stretcher aboard while the aircraft regained RPM and control while descending into the valley."

Thirty-five minutes later the patient was in an ambulance bound for the hospital at Mount Vernon, Washington.

"In summary," the pilot stated, "difficult terrain was the only problem. Highly trained mountain rescue and Navy ground parties in conjunction with excellent communications furnished by a Navy communications truck, made the rescue possible."

Though not evident in the photos showing how the pickup was made, the rescue report adds some details to the pilot's problems. Density altitude was 9100 feet, there was no hovering space, and clouds were at rotor level. "The UH-2B," added the station C.O., "was being flown at the maximum operating limits and it is considered that this crew used their equipment to the best advantage. The attending physician has stated that had the teams been required to evacuate the patient on foot the victim probably would not have survived the trip."



'All After... ROUTINE'

Believing the aircraft to be on fire, the pilot and RIO ejected. . . .

In a night approach, an F-4B hit the ramp and boltered. Believing the aircraft to be on fire, the pilot and RIO ejected ahead of the carrier. Here is the RIO's story. . . .

"I reached for the face curtain handle. As I left the pilot was broadcasting MAYDAY. I tumbled once and had started a second tumble when the drogue chute deployed and stabilized the seat. Ejection altitude was about 1000 feet. After the chute opened, the thought went through my mind, 'Well, you're still in one piece so use your head.'

"Down below, the carrier was headed in my direction some 300 yards away. Got rid of my oxygen mask without difficulty. Now I could see the flight deck. Released my pararaft. Locating the handle was a bit difficult but found it and pulled. The raft deployed, swinging down and to my right. Put my hands on the rocket jet fittings and waited for water entry. Released the parachute as I hit the water.

"Although I had been in the air only an estimated five to ten seconds, I seemed to have had plenty of time to think clearly. However, I would not have had time to operate the seat manually if the automatic sequence had failed to function as advertised.

"After entering the water and releasing the parachute, realized my flashlight on a lanyard around my neck was tangled in the chute and was pulling my head under. Tried to locate it—didn't want to lose the flashlight. Finally realized I would have to get rid of it. Took off my helmet and slipped the

lanyard over my head.

"By this time the carrier was only about 50 feet away. I tried to swim away, still holding on to my helmet. As I was swimming away I ran into my raft, put my helmet inside and held on.

"*The ship passed.* Realized a number of smoke flares plus three taxi director wands were thrown from the flight deck and were in my immediate vicinity. The flares gave enough light for me to see all of my equipment.

"Getting into my raft was no trouble. Settled in it and began bailing with my helmet. The raft became very seaworthy with most of the water out. When the raft crested the swells, I could see the masthead lights of the first destroyer. As the ship approached, fired nine rounds from my .38. Was sure that they saw the tracers. However, *they passed by and continued on their way.*

"The smoke flares were still about 100 feet away. Decided I had better stay with them. Paddled over to them, but as I approached, got too close. Began to worry that they might turn on me and burn a hole in my raft. I retreated about 15 feet and rested.

"The flares went out. Now the masthead lights and the searchlights of the second destroyer were visible. As searchlight beams began to pass over my head, reloaded my .38 and fired five or six more tracers. The searchlights stopped in my vicinity. Was sure the destroyer knew my position. Decided the smart thing to do was to fire a distress signal flare to pinpoint my position. Had fired about 11 shells from my .38 so thought it well to save the rest in case the second destroyer began to bypass me.

"Pulled the night end of the distress signal flare, but nothing happened. Held it in the air for a couple of minutes. It did not ignite. Decided to pull the day-smoke end. Again nothing. Realized it was a potential bomb with both ends exposed so threw it away.

"I then remembered the survival equipment in my seat pack. Pulled everything into the raft. Found the survival kit and laid it between my knees. Both halves of the Scott seat kit were in the water as a sea anchor. Looked up and saw a motor whaleboat approaching. Fired two more flares. A spotlight from the destroyer was now shining on me. The only time I could see the ship itself was when I crested the swells. Held up my helmet so the reflective tape would be visible in the spotlight. Later heard this was quite effective.

"The whaleboat approached. Whistled at them. They answered. Knew rescue was only a matter of minutes.

"I then wondered where the pilot was. Shouted his name several times but got no response. By now had been in the water about 30 minutes and was beginning to stiffen up from the ejection.

"The whaleboat came alongside. Crawled in and pulled all my gear aboard. Asked if they had located anyone else in the water. Either they didn't reply or I didn't hear them. However, a few seconds later saw the pilot in his raft. We went over and started to help him aboard. He was entangled in lanyards and shroudlines. (*He had forgotten to release the left lower rocket jet fitting.—Ed.*) I cut all of his lines with my survival knife so we could lift him aboard. We pulled in all his equipment and headed for the destroyer. Everything after that was routine.

"It should be noted that at no time did I have difficulty swimming or remaining afloat. I never inflated the Mk-3C life vest and feel that this is one reason had no difficulty manning my raft. Thought later on that I would keep it as a reserve. Would have had little or no difficulty remaining afloat through the night. . . .

"The officers and crew of the destroyer should be commended for the excellent rescue techniques. I have the highest praise and respect for the well-trained crew of that ship."

Time to Go!

A black autumn night . . . attempting to land aboard ship at the end of an intercept mission an F-8E pilot experiences faulty controls . . . touchdown . . . a bright flash on the port side of the plane . . . stick and rudder stiff. The pilot knows that it is time to go.

"The aircraft continued slowly rolling left. I no longer needed to debate my course of action. The aircraft was clearly out of control. I pulled the curtain.

"My sitting position was fairly good with my head slightly forward. Ejection was normal. There was curtain travel interruption and good seat boost. Instantly after chute deployment shock, I hit the water horizontally on my left side. Tumbled violently to the right and immediately concentrated on freeing my shoulder rocket jet fittings. The right fitting came off easily. The left was much more of a problem; I couldn't find it.

"The billowing chute dragged me feet-first. My body was spinning. I took what breaths I could. Then, pulling my knees up to my chest, I held my breath. By feel I discovered the trouble. My left rocket jet fitting was pulled tightly over my left shoulder. Risers and shroudlines were wrapped tightly around my waist and legs. In a counterclockwise spiral they bound my legs and feet tightly together. My bailout oxygen depleted, I ripped off my mask. Gasping what air I could, I held the doubled-up position and straightened my legs downward to try to pull the chute underwater. This seemed to work.

"At the same time, I tried to release my left rocket jet fitting. No success. I pulled my legs up. Grabbing shroudlines in bunches, with the shroud cutter which I carry in my inside right anti-g suit pocket, I cut away.

"The chute collapsed, then began to pull me down. I inflated my life preserver. For a couple of minutes it kept my head above water. I was 10 feet under when I finished off the last few bunches of lines. With my lungs about to explode I surfaced. Freed the remaining lines from around my legs and torso, then released my left seat pack fitting to get the pack up to the right. Turned on my mercury battery survival light and started looking for the destroyers.

"After a couple of minutes I saw that one destroyer seemed to be making an approach to the lights astern of the carrier. I fired a night distress signal flare. The destroyer responded by showing me a starboard running light instead of a port light. They spotted me in their searchlights.

"The wind was close to 40 knots with high seas and tremendous amounts of water being blown. (*Water temperature was 67°.—Ed.*) Having two years of shiphandling experience, I realized the magnitude of the DD skipper's problem. He attempted to put me downwind quickly by S-turning to starboard but fell off in the wind and seas. I was prepared to wait because of the conditions.

"As the destroyer swung away, (the skipper later reported 'the wind took charge'), I yelled to the deck watch 'I'm TIRED!' I *was* getting tired and I wanted them to know that I probably wouldn't be able to swim by the time they made another approach. I hoped that they would put a swimmer over to help me. They yelled acknowledgement and veered off. I then inflated my raft without difficulty. After being overturned four times in as many minutes, I got smart. Put my seat pack between my knees and just pulled the upper part of my body onto the raft. The seat pack gave sea anchoring action which combined with my regular anchor to keep the raft upright.

"The seas were high. I was continually engulfed by tremendous breakers. I considered myself in good shape, though tired. Felt able to wait for a successful approach of the destroyer. I estimated she would take about 20 minutes per approach. Looked at my wristwatch only to discover it was missing.

"After my night distress signal flare burned out, I

doused it to cool it. Put it in my right anti-g-suit pocket. Figured I was still set with a reserve of two day flares and one night flare. Planned on using the .38 tracers if the ship gave any indication of losing me in the seas. Felt confident of staying afloat all night in my newly-discovered raft position. The DD skipper told me later that the survival light was very bright and gave excellent flashes though he could only see me occasionally.

"The reflective white tape on the pilot's helmet was one of the greatest aids in this rescue," wrote the destroyer skipper.

"The skipper's second approach was a beauty with the DD upwind and seas on the starboard bow. Stack gases were very bad, but the seas in his lee were a lot better. I then saw a swimmer in life vest and wet suit with line attached coming for me. I vowed not to leave the raft 'til he had a solid grip on me and I was alongside the ship. He towed me 50 yards to the ship's ladder. I was shivering violently and felt fairly weak. Mustered all the strength I had to climb that ladder with the swimmer's help. A second crewmember came down the ladder to help us. The seamanship and teamwork of the destroyer's crew was just what I've always expected it to be—outstanding!

"Generally speaking, my ejection was normal except for my inclined trajectory. My experience proved quarterly squadron dry-run ejections and periodic survival lectures are essential—particularly in the first few minutes after water entry. Again, I can't praise the DD skipper and his crew enough for their expert seamanship and teamwork."

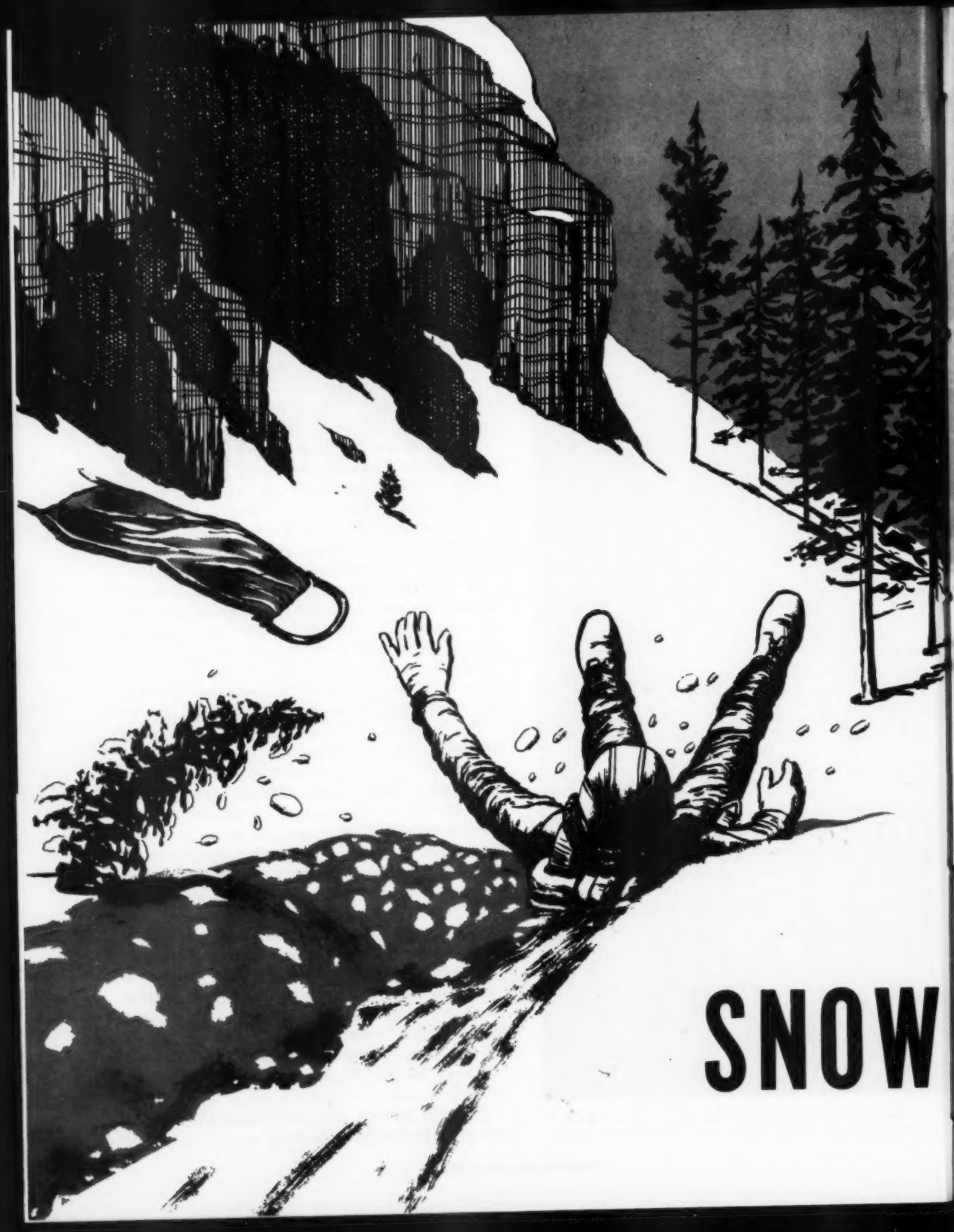
The destroyer skipper states in his Rescue Report that the greatest aids in this rescue were "the reflective white tape on the pilot's helmet, the emergency light which he carried, the flare that he lighted during the first approach, and the training he had had in survival. The pilot did a wonderful job of proper and timely survival procedures for himself."

The reporting flight surgeon had words about physical fitness and training. . . .

"This pilot's excellent program of personal physical fitness was a major factor in his survival. LCDR X keeps himself in superb physical condition by daily exercise, weight lifting, . . . The rigors he had to endure, the strength needed to free himself from the shroudlines, and the endurance required to continue cutting on the shroudlines after being pulled underwater would in all likelihood have been too much for the average pilot. I believe many aviators would have succumbed given the same situation.

"In addition, his squadron's training and previous experience furnished him with the ability to think things out clearly, to use all his survival equipment in an exemplary manner and to keep a cool head without panicking. All this enabled him to have the confidence in himself and his equipment necessary for survival.

"His only injuries were moderate shock, exposure and contusions of the right knee."


SNOW

W SLIDE

The winter day was ideal—ceiling unlimited, visibility unrestricted. In the Sierras, sunshine sparkled on the snow and green fir trees cast blue shadows right off a Christmas card. As the A-4E pilot, part of a five-plane flight, moved up for his second aerial refueling plug-in with an A-4E tanker at 12,500 ft., he was completely unaware that he was about to make bailout history.

Although the first round of plug-ins had been routine, on the second round the plane ahead of our A-4E was sprayed with a small amount of fuel as it disengaged. After what appeared to be a smooth plug in, our pilot's troubles began. Fuel poured from the drogue over the nose and canopy and into the engine intake ducts. He broke away to starboard as the engine began to run rough due to compressor stalls. Attempts to correct the situation were unsuccessful. Suddenly he realized he would not clear an "approaching" mountain ridge and ejected.

One second after ejection, the plane crashed; three seconds after ejection, the pilot struck the ground in 30 inches of snow on a slope near the top of a 9500 ft. ridge. Seat separation had taken place but there had not been time for parachute deployment. He bounced 40 feet, struck the snow-cushioned ground a second time, and skidded into the base of a tree.

"I lost the face curtain and I hit," the pilot recalls. "The next thing I remember was hearing the emergency oxygen hissing and I removed my face mask. I was up against the base of a tree. I ached all over but in a couple of minutes began to realize that I was going to survive."

Two broken bones in his right leg constituted the pilot's major injury: He was also, and understandably so, suffering from mild shock.

With his squadron mates orbiting overhead, he got his life raft out and inflated it, then managed to push it into the sun so it could be seen. He fired five rounds of tracers at the lead aircraft but received no acknowledgement. He had a hard time getting the cap off a daysmoke distress signal. At first, the signal fizzed for a few seconds. Then he banged it against the chute pack and it lit. The next aircraft overhead rocked his wings.

The pilot's torso harness and flight suit over regular underwear and anti-G suit were not the ideal outfit for snow so he wrapped up in the parachute he had pulled out of the pack. For extra warmth, he laid the paulin over his legs.

"It was reassuring to know the boys had me in sight," he told accident investigators. "Later some A-1s came, then a chopper. An A-1 dropped extra flares and a flight jacket after I made it onto the inverted raft. I was getting tired and weak so I would lie down for a couple of minutes and watch the aircraft overhead, then I would sit up and wave until I got weak and had to lie down again. Just before the helo came, a UF circled and made some passes."

The first persons on the scene were two civilians from a ski lodge 3 miles away who had traveled to the crash in a snow-cat. One of them was an ex-Navy hospital corpsman. They were assisting the pilot when a Navy doctor arrived via helicopter and determined that the injured man could be safely moved. A second helicopter arrived and the pilot was flown to a hospital.

The investigating flight surgeon noted the following areas in his report:

- The pilot was not adequately clothed for flight over mountainous terrain where cold weather existed. If the survival phase had been extended for a longer period, the degree of exposure could have been much more severe.
- Despite the fact that the pilot's location was determined almost immediately after ejection, rescue did not take place for three hours and 50 minutes. This would have been avoidable, the flight surgeon says, if everyone hadn't "sat back and waited" for the H-19 aircraft to arrive from the NAAS—even though its lack of high altitude capability was well known. Bases located in areas of frequent flights over mountainous terrain should have rescue helicopters assigned which are capable of performing efficiently at high altitudes.
- The parachute did not deploy because the aneroid setting is 10,000 ft. Pressure altitude and seat-man separation occurred above this altitude over mountainous terrain where the pressure altitude was 9840 ft. at ground level. (*It has been recommended to the Bureau of Naval Weapons that aneroids set to open at 14,500 ft. be made available for squadrons operating over mountainous terrain.—Ed)*

At any rate this lucky pilot has a happy hour story that will be hard to top.

Well Done!

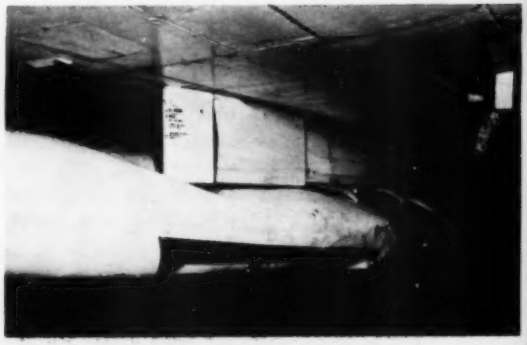
VA-153

Arrested Landing on a Centerline Tank

Shortly after takeoff, the **Skyhawk** pilot noted that his starboard main landing gear indicator was "barberpoled." After cycling the gear twice, the starboard main gear still remained in the unsafe position. The strut had failed to fully extend after takeoff causing the starboard gear to jam in the wheelwell against the catapult linkage. Neither "G" application nor speed changes would unjam the gear.

The NAS Barbers Point operations duty officer had a NATOPS Manual available and discussed by radio all the possibilities with the pilot and his wingman. After exhausting all emergency procedures, it was decided to raise the port main and nose gear and make an arrested landing on the 150-gallon centerline tank and a foamed runway. Although an LSO was not available, the wingman landed, assumed a position abeam the first arresting gear wire and coached the pilot down. The normal approach speed of 120-122 KIAS was considered too nose high an attitude so the final approach and arrestment was made at 126 KIAS. This more flat attitude was believed to reduce the nose pitch-over during the arrestment. The arrestment was smooth, the touchdown gentle, and the runout straight. The aircraft suffered very little damage.

NASC files indicate that this is the first recorded A-4 wheels-up landing on an empty centerline tank.



Notes from your Flight Surgeon

VISOR DOWN PAYS OFF: Flying glass from a canopy implosion at 21,500' at .92 IMN damaged this helmet and caused minor cuts on the pilot's face. His eyes were uninjured.

Modified Leg Garters, II

TWO more ejections have been reported in which pilots were wearing modified leg garters with the Mk F5A Martin Baker seats. (See Notes from Flight Surgeon, November APPROACH.) The ejection systems functioned normally.

In the first case, during ejection, the lower two leg restraint garters and the area to which they were sewn were partially torn from the rest of the anti-G suit. The leg restraint lines were in the fully extended position. Because of this, the pilot received his only injuries —bruises on the tops of both feet.

In the second ejection, one modified leg garter tore loose. Fortunately the pilot was uninjured.

Leg restraint garters are designed to prevent injury to the ejectee. The "sewn-on" arrangement in these cases violates BAC-SEB 5-60 in that the restraints were improperly applied and, as of this writing, are not authorized on the anti-G suit.

If the unauthorized leg restraint garters are used and ejection takes place at high Q, the garters may position the legs initially, but they will not prevent flailing of the legs with resulting severe incapacitating injuries.

Training Film

A TRAINING film on underwater escape is now being filmed from a BuWeps-approved script titled "Escape from Ditched Aircraft." The film is a joint effort of the Naval Photographic Center and the Aerospace Crew Equipment Laboratory of the Naval Air Engineering Center, Philadelphia.

The movie includes both underwater egress and ejection procedures using present operational equipment. Underwater escape scenes are being photographed at the ACEL Underwater Research Facility.

The Bugs of Winter

WHETHER you get your bug tonic from the local witchdoctor or your corner druggist is largely a matter of tribal custom and geography. But if you happen to be a naval aviator or crewman you'd better take your "common" cold to your friendly flight surgeon. Those little goodies you see on the "idiot box" screen in the BOQ can have dangerous side effects if you fly.

- Mild analgesics (you've seen those commercials?) may decrease your tolerance to hypoxia.
- Antihistamines can lower resistance to the onset of vertigo. They can also cause drowsiness, decrease depth perception and reduce perceptual motor skills (that's Hippocratic for such things as eye-hand coordination).
- Nasal decongestants can cause rapid heart rate and "soup you up" until you get tremors, become uncoordinated and have overdilated pupils.

So don't just swallow a couple of cold tablets and head for the flight line when you feel the bugs of winter coming on. It's dangerous enough to fly without a cold or the flu, but it's much more dangerous to fly with your miseries plus the effects of self-medication. Go see your friendly flight surgeon. Please?

Stranger Than Fiction

WHEN the pilot of a P-2E learned an inflight fire was out of control, he gave the order to bail out. The plane captain reported that *he did not have his parachute harness on and could not find it.* The pilot then ordered all hands to bail out except for the plane captain and himself. After short deliberation, the decision was made that all would stay aboard for ditching at sea—a ditching which, by the way, was successful. (For a complete account of this case, see T & C, page 12 this issue.)

Helo Pick Up

FROM an AAR: It is recommended that the helicopter pick-up phase of survival training be reinstated. Review of this accident plus another recent Detachment AAR tends to indicate a lack of familiarity with helicopter pick up procedures. The Detachment has been briefed by the HU Detachment aboard ship but *this does not take the place of the actual pick-up.*

The Unknown Role

By LCDR C. C. Witkowski, HU-4

An old hand says quality controllers too often become production's fall-guy. In defending themselves, the efforts of both quality control and production become diluted. Here are the reasons why . . .

After three years of experience as Quality Control Officer and having served in other maintenance billets, it is my opinion there is a universal misunderstanding of the true role of Quality Control.

This misunderstanding exists in the minds of many in command levels as well as those in the maintenance working level. The essence of this misunderstanding is that in effect, Quality Control must *guarantee* the workmanship of production people. The conclusion then is that the only means of having work guaranteed (controlling the quality of workmanship) is to have qualified people observing each step of each job from beginning to end. Whether referring to the military or industrial work process, manpower limitations make such an arrangement *in toto* unfeasible.

An alternative is to have the entire job redone by qualified personnel. Obviously this possibility is also unfeasible. Yet, very often this is being done. Here's why. Left out of the picture is the basic fact that production people, not quality control people have the primary and most compelling responsibilities for quality workmanship. The omission of workmanship responsibility is reflected in practically all maintenance error mishaps, yet quality control is held immediately and finally accountable for faulty maintenance work. Production or maintenance people go scot-free. This makes it easy for production in that quality control becomes the fall-guy for production. To protect themselves, quality controllers find themselves jumping into the role of production. This is reflected particularly in completing double aircraft checks where production has failed to perform properly.

There are other side effects involved but the most insidious aspect is the trend of quality control people being compelled to take over more and more of production's role for general self-protection. This results in the inadvertent failure of quality control to perform its functions as spelled out in BuWeps Instruction 4700.2, thus precluding a well-rounded quality control program.

The primary goal of quality control is to ensure the best possible job is done with the quality and quantity of manpower available to the activity as well as availability of support tooling, ground equipment, shop and hangar facilities. At this point it might be well to review these concepts of quality control:

Quality Control is designed to serve both Management and Production equally. Management is served by Quality Control monitoring the complete maintenance effort of the Department and furnishing factual feedback of discrepancies and deficiencies. In addition, the action necessary to improve the quality, reliability and safety of maintenance is provided. Production is served by having benefit of Collateral Duty Inspectors formally trained in inspection procedures by Quality Control and in receiving technical assistance in resolving production problems. The introduction of Quality Control to the maintenance function does not relieve production of the basic responsibility for quality work, rather that responsibility is increased by adding "accountability." This accountability is the essence of Quality Control. It is recognized that quality and safety cannot be inspected into a job—that the person doing the work controls quality—and that inspection confirms the presence or lack of quality to prevent deficient workmanship. In this regard, the inspection services provided by the Collateral Duty Inspectors are an integral part of the production process. Under the proper concept

# of Quality Control

of Quality Control, the quality of work is assured not controlled.

The person with the most direct concern for quality workmanship is the production supervisor. This factor stems from his responsibility for the proper professional performance of assigned personnel. It is the direct responsibility of production supervisors to assign a Collateral Duty Inspector at the time work is assigned. This procedure allows inspectors to make the progressive inspection required instead of being confronted with a job already completed, functionally tested and buttoned up. The completion of production work is not a function of Quality Control, and production personnel in the dual role of inspector cannot certify inspection of their own work.

The degree of quality attainable in the Department depends mainly on the training, supervision and quality attitude of production personnel, and the proper use of current publications, backed by an effective inspection system. The mission of Quality Control can only be realized when it is continually and progressively exercised in all areas, and directed toward improvement of the Naval Aircraft Maintenance Program in the Department.

In summary, it is recommended that all levels be educated to understand that quality control should not be automatically pinpointed as solely accountable and responsible for maintenance errors. Fair and realistic apportionment of responsibility is in order. Production as well as quality control must be assigned as interested parties. Unless and until this is accomplished, the negative trend of quality controllers assuming production roles will continue.

Guides to Troubleshooting

By LCDR Jim Winnefeld, VS-26

High turnovers, shift changes and absence of the 'expert' on this or that puts the trouble in troubleshooting. Here's a system which can help your outfit whip the problem.

Every aircraft maintenance department is plagued in greater or lesser degree by repeat gripes. These gripes, which pop up repeatedly on the same aircraft in spite of "corrective" action, are the despair of every maintenance officer and his quality control division. Although there are many possible causes for repeat gripes, the most common one is due to poor troubleshooting procedures. Here's one remedy that VS-26 has found useful in troubleshooting some types of discrepancies.

Every squadron has its notorious case(s) of cantankerous gripes that appear on yellow sheet after yellow sheet with different or repeated "corrective" measures being taken after each new write-up. When the "mystery" is finally solved, the people involved are usually embarrassed by the simplicity of the corrective action required or because of public exposure (everyone reads yellow sheets!) of faulty troubleshooting techniques. People on board usually learn the lesson well and the incident fades from memory until the next time. When it does recur we too often find that there has been a turnover of personnel, the expert is on leave or TAD, or the lesson has simply been forgotten. Thus maintenance supervisors are faced with the problem of developing a system that will withstand changes of key people and overcome memory lapses. "Hold it," you say, "that's why we have bulletins, TIMIs, the HMI and the whole system of maintenance directives."

It is true we have all these aids to better mainte-

nance; but experience has proven that these aids even in the hands of competent technicians are *not adequate by themselves to insure that proper trouble-shooting techniques are followed.* There are many reasons for this:

Memories are not infallible. Although aware of the proper procedure or where it is written, the natural tendency is to trust memory. The frequent result is that important items are missed. In some cases the procedure is not written down anywhere and the specific techniques employed have to be dredged up from memory.

Technical directives are not specific. In many cases technical directives are not specific as to application to a particular aircraft or component. With such general directives a local interpretation must be made by those best qualified and not by the junior technician who is handed the work order. This interpretation is normally done via the maintenance instruction as outlined in BuWeps Inst 4700.2.

Availability of Technical Publications. Squadron maintenance officers go to a great deal of trouble to see that adequate and up-to-date technical publications and directives are provided their divisions and shops. In spite of the administrative tidiness and stringent requirements demanding adherence to specified procedures in troubleshooting, there is a human tendency to leave the book in the shop (after reading it, to be sure) and proceed to the aircraft to do the work. In essence "the word" hasn't traveled to the job except in the memory cells of our technician.

Loss of experience. Every maintenance officer is aware of rapid personnel turnover; he lives with it daily. With the transfer of the fine technicians we have trained over the period of several years goes our repository of experience as to how special gripes or inspections should be handled. Too often the next group must learn these lessons over again the hard way.

These reasons and others indicate the cause for the deficiencies in our troubleshooting techniques. There are many stock answers for meeting these deficiencies: more and better formal and on-the-job training, rigid inspection and quality control requirements, close supervision by well qualified petty officers. . . . There is no need here to go into the obvious merits of these solutions, all of which should be carried on as a matter of course. Our purpose here is to propose a guide format that can be used to assist maintenance officers in ensuring that the word gets to the job on repeat gripes and special inspections.

A Guide to Troubleshooting

Aircraft Side No. _____

Date _____

Check List for Fuel Fumes Inspections

1. This check list is intended to provide a standard and systematic procedure for performing inspection of an aircraft in which fuel fumes have been detected.
2. Perform all of the items listed in sequence to eliminate most common discrepancies first unless information on hand indicates otherwise, i.e., "fumes noted only when heater in use."

- ☐ 1. Surface plates on top of wing at all fuel tank access plates and around filler necks.
- ☐ 2. Access plates under turtle plates.
- ☐ 3. Fuel quantity probes under turtle back for leakage around securing screws and around electrical leads.
- ☐ 4. Fuel lines in after section of wing stubs. (This requires airframes to drop flaps.)
- ☐ 5. All low point drains and wing surface around them. (Five located on each side of aircraft. Three on under surface of wing and two located in each wheel well.)
- ☐ 6. All fuel lines in accessory sections. (Main fuel lines to fuel pump and to carb., lines attaching to carb., oil dilution lines, and on the stbd. engine the heater fuel line.)
- ☐ 7. All fuel lines in wheel wells.
- ☐ 8. Fuel selector valve located in wheel wells.
- ☐ 9. Emergency fuel shut off valve located in wheel well.
- ☐ 10. Under surface of fuel cell cavities in electronic compartment.
- ☐ 11. Heater compartment and all fuel lines.
- ☐ 12. Heater fuel lines in stbd wing stub forward section of wing.
- ☐ 13. Heater lines going to heater through fuselage of aircraft.
- ☐ 14. Fuel lines in heater compartment under filler cover.
- ☐ 15. All fuel cell cavities outer surfaces for visible leakage if none is found at any of above areas.

Remarks: _____

Check performed by: _____

(Return check list to Q.C. when completed).

Fig. 1

As a result of an extremely high rate of personnel turnover and a wholesale loss of experienced mechanics over a period of a few months, VS-26 quality controllers devised troubleshooting check lists for a variety of gripes that trend analysis had showed to be unduly repetitive. A sample of this check list for fuel fumes gripes in S-2D aircraft is shown in Figure 1. A guide was felt to be necessary since experience indicated that the fumes could come from a variety of sources, i.e., heater, leaky cell, loose fuel caps, faulty drains. . . . It is not the final word on fuel fume gripes, but it does illustrate one approach to the problem. It can be used by relatively inexperienced personnel (who form the bulk of any maintenance organization).

Since the guide was developed, several others have

A Guide to Troubleshooting

Aircraft Side No. _____

Date _____

Check List for Hard Landing

1. This check list is intended to provide a standard and systematic procedure for performing inspection of an aircraft which has sustained a hard landing, high speed arrestment or other out of the ordinary recovery.
2. Perform all items listed as appropriate in each case to insure complete coverage.

Airframes

- ☐ 1. Tires for bulges and cuts.
- ☐ 2. Valve core or alignment.
- ☐ 3. Wheel assy. for cracks.
- ☐ 4. Wheel bearings for distortion.
- ☐ 5. Axle for alignment.
- ☐ 6. Trunnion bolts area for popped rivets and alignment.
- ☐ 7. All struts for scored pistons, correct air pressure, blown seals, and O-rings, go and no go gage test.
- ☐ 8. Wing butt area for possible distortion.
- ☐ *9. A-frame and attaching bolts for distortion and alignment. Also area around A-frame for popped rivets. *If landing was afloat.

Power Plants

- ☐ 1. Engine attaching bolt at firewall for alignment and popped rivets or cracks in firewall.
- ☐ 2. All lord mounts for alignment and security.
- ☐ 3. Tubular framing for cracks and security at attaching points.

NOTE: Drop check required (cycle three times).

Remarks: _____

Check performed by: _____

Airframes

_____

Power Plants

(Return check list to Q.C. when completed).

been made. Some of these back up maintenance instructions which in turn back up bulletins and other technical directives. Let us turn now to take a closer look at the guide itself. In looking at Figure 1 we see that there is a systematic approach to even such a simple (but safety-of-flight) gripe as fuel fumes in the crew compartment. There is provision for each step in the troubleshooting sequence to be signed off. The guide itself is mimeographed on knee-board size cardboard which may be handily put in a pocket or tool box. *"The word" goes to the job.*

When a gripe of this nature is found, maintenance control issues a work order with the troubleshooting guide attached. The guide must be signed off before the work order can be signed off. This procedure precludes the possibility of an inexperienced technician signing off the work order after finding a *single* contributing discrepancy. The entire sheet must be filled out in order to remedy those troublesome gripes that often have as their cause two or more contributing malfunctions. The completed guide is filed with the completed work order in order to have an *exact record* of the work completed on that *particular aircraft.*

An additional use has been found for the troubleshooting guide in the conducting of one-time inspections. A good example of such an inspection is that undertaken after an aircraft receives a hard landing. Other such inspections might be those required by overspeeds and overboosts where a local interpretation of the pertinent bulletins is desired.

It may be argued that our present system of putting out the word in maintenance instructions, maintenance bulletins, tech pubs, etc., is adequate. It might be adequate if we were a one-shift Navy, with no personnel turnover. However, with the rapid personnel turnover characteristic of today's Navy valuable experience is invariably lost before it can be adequately replaced. Too often, one shift or watch starts troubleshooting and must hand-off to another shift. At the minimum, valuable time can be wasted

A Guide to Troubleshooting

Aircraft Side No. _____

Date _____

Fire Warning Check List

1. This check list is intended to provide a standard and systematic procedure for performing inspection of an aircraft in which a fire warning discrepancy has been noted.
2. Perform all items in sequence to eliminate most common discrepancies first unless information on hand indicates otherwise.

Items 1 through 4 are for a fire warning light which comes on either on ground run-up or in flight. This could be a steady or intermittent light. Items 5 through 8 are for a "won't test" discrepancy.

- ☐ 1. Exhaust stacks, broken or loose.
- ☐ 2. Control unit.
- ☐ 3. Wiring, shorted.
- ☐ 4. Continuity relay, stuck.
- ☐ 5. Light bulb.
- ☐ 6. Control unit.
- ☐ 7. Test relay.
- ☐ 8. All wiring for open circuit.

Remarks: _____

Check performed by: _____

(After completion return to Q.C.)

by repeating steps already completed; at the worst, a vital step can be overlooked.

It has not been the intent to imply that all troubleshooting techniques can be reduced to guide form. However, each squadron has its own problem areas in experience level, numbers of personnel, and material deficiencies that require special attention. The guide format presented has the advantage of being suitable for tailoring to almost any problem area. It is one of VS-26's answers to such problems.

Chopper Turn-up Qualifications

A crew of mechanics were assigned to perform engine type D preservation on several helicopters parked on the overhaul line.

Mechanic A got into the pilot's seat of a UH-34E, started the engine and ran it at 1500 RPM for a few minutes when the engine started a series of rapid surges to high RPM. An explosion followed and fire flashed from the engine. The mechanic tried to secure the engine without success. He vacated the cockpit, seized a fire extinguisher and commenced fighting the blaze. Meanwhile, blades shed from the cooling fan ripped through the fuselage, penetrated a UH-34D to the port and another -34D to the starboard. Mechanic B in the cockpit of the latter was fatally injured when a blade fragment struck him in the neck.

Investigators reported the suspected cause of this mishap was the use of improper starting procedures in that the mechanic had advanced the mixture control of the -34E before being certain of auxiliary servo hydraulic pressure and closed throttle. When aux servo pressure came in, the engine went to overspeed. When the mechanic did not react in time, blades shed from the cooling fan due to excessive RPM and cut through cables to the throttle, mixture, ignition and switch and throttle servo controls. At the same time, fuel, oil and hydraulic lines were severed thus accounting for the mechanic being unable to secure the engine. The engine died of fuel starvation because of the damaged lines.

The mechanic was not certified as qualified for ground testing helicopters. He had turned up several -34Ds prior to the accident but was not familiar with the -34E and did not realize there was any difference in starting procedures of the two models. He had no knowledge of the throttle governor servo operation

Cooling fan disintegrated . . .

Penetrated chopper to port . . .

Killed mechanic in chopper to starboard

or any particular precautions to be taken with helicopters having throttle governor servos installed.

Several contributing factors were also involved in the mishap:

1. Although the O&R had a requirement that personnel must receive training and a certification card prior to ground testing helicopters, supervisors did not interpret this to mean that the qualification requirement applied to preservation mechanics. This reasoning stemmed from the fact that the preservation crew did not "ground test" the aircraft but were simply required to turn up the engine at low RPM (max. 1500) to circulate engine oil.

2. The mechanic used procedures outlined in the NATOPS Flight Manual for the -34D and the Supplemental Flight Manual for the -34E. Neither mentions the throttle servo governor. The necessary precautions were covered in the Flight Manual of the -34E but had been superseded in current manuals which refer the operator to the NATOPS Flight Manual for the -34D.

3. Aircraft Service Change 221 had not been incorporated. This change replaces the existing multipiece magnesium cooling fan with a forged aluminum fan disc which is better able to withstand centrifugal force during engine overspeed.

Recommendations include:

- That steps be taken to insure that *only* fully qualified personnel be permitted to start and ground run-up helicopters.
- That the supplemental Flight Manual for UH-34E be revised to include a description of the throttle governor and servo operation and the necessary precautions for starting procedures.
- That NATOPS managers insure that all series of a model are included in NATOPS Flight Manuals before current flight manuals are superseded.
- That ASC 221 be incorporated in applicable helicopters as soon as possible.

From the Top, Down

AFTER completing an air-to-air gunnery flight, the F-8E was taxied to a de-arming area. While the aircraft was being de-armed, a chief ordnanceman attempted to cross under the nose of the aircraft. Suction of the engine intake pulled a fabric cap from his hand—the resulting damage to the compressor required an engine change.

Investigators stated that the primary cause of this mishap was the lack of adequate caution on the part of the CPO in that he wore unauthorized clothing in the areas of engine operation. The fact that he had removed his cap and had held it in his hand while crossing under the nose of the aircraft indicated that he did not fully appreciate the hazards involved.

Supervisory personnel were reminded to review their own actions to ensure compliance with safety precautions that only prescribed flight line clothing be worn. Disregarding these requirements undermines the most conscientious efforts of all who strive to make naval aviation as safe as humanly possible.

The C.O. commented, "the existence of instructions does not in itself ensure immunity from mishaps of this nature. Supervisory personnel must comply with these directives and insure that subordinates do likewise."

Ordnance Know-How

AN X4D bomb rack with 6 Mk-76 practice bombs was ejected from an A-4E on its first bombing run. Inexperienced ordnance personnel had loaded the practice bomb rack with the practice bombs and neglected to disconnect the primary firing circuit of the Aero 7A bomb rack.

The cause of this mishap, said the C.O., must be laid squarely on supervisory personnel who failed to instruct the loading crew thoroughly and failed to inspect the completed job. Everyone is inexperienced during the early stages of any job, and supervisors must make certain that the inexperienced are instructed, guided and inspected until they are no longer in this category. The increased tempo of operations as a part of an attack carrier air wing as opposed to shore-based operations provides less margin for error. Supervisors were reminded that accuracy is more important than sortie rate.

Cold Weather Tip

AFTER an extended ground cold-soak, the landing gear struts may appear to have insufficient piston extension. If the struts were properly serviced to chart values at a warm weather airport it is normal to observe the much lower extension at lower temperatures and no reinflation is required since with a temperature rise, extensions will again fall within chart values. However, any time the strut bottoms, the oleos should be reserviced since visual determination of strut pressure is not possible under this condition.

Tires should be checked carefully for excessive deflation. Although it is normal that the pressure will drop somewhat as the temperature becomes lower excessive deflation may indicate cold weather air leakage at the valve stem or at the wheel seat.

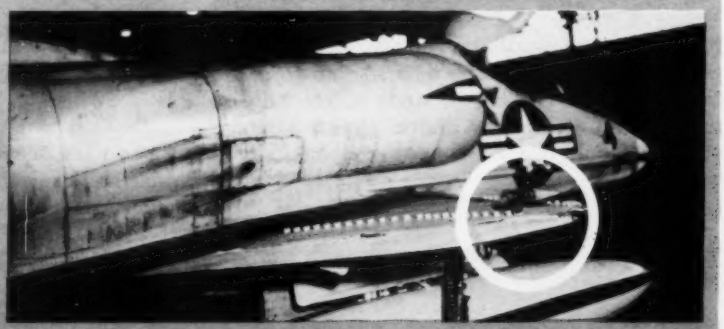
If possible, the aircraft should not be parked

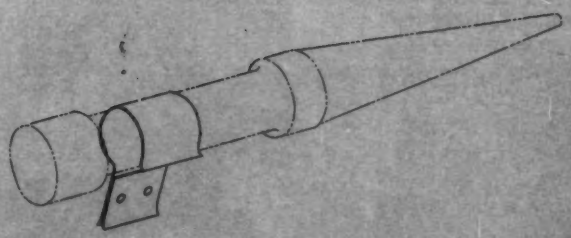
Prevent a Crunch Aid

Since the *Skyhawk* has no battery, an external light source is needed when towing the aircraft at night. VMA-242 came up with a simple, effective local solution to the problem by manufacturing stainless steel clamps with riveted clips (see drawing).

Plane captains place a wand inside the clamp then attach the entire assembly by clipping it on an outboard wingtip vortex generator (see photo). A wand attached to each wingtip makes the task of towing an unlighted A-4 on a crowded, poorly illuminated ramp a bit less hazardous.

Materials can be easily obtained and the clamp manufactured at the squadron level. Safety Officer Dave Redfield says, "It is realized that unlighted aircraft have been towed for years, but they have also been crunched for years. Perhaps other A-4 users can find use for this idea."





with the tires on ice or snow where they will freeze to the ramp. If the tires should become frozen to the parking ramp, hot air or hot water should be used to melt the ice bond before attempting to move the aircraft; however, once the ice is melted, the aircraft should be moved immediately or freezing will occur again.

FOD

SOMETIMES we become so sure of our knowledge that it is felt the ultimate has been reached and nothing more can be achieved. Invariably, this mental attitude leads to a neutral position in the thinking room and insidiously from there to the rock-strewn area of misconception. A concrete example of this theory can be found in the general attitude toward FOD.

It is common knowledge that our axial flow inhalers have an enormous appetite for air and anything else headed their way. Their digestive tolerance for anything other than fresh air is extremely delicate, however. We all deplore the fact that dirty and littered conditions (along ramps and runways, we presume) enable our engines to swallow lots of junk, causing all kinds of internal distress. Obviously, we say drastic airport sanitary measures should be taken for our equipment's protection.

This statement illuminates an erroneous conclusion, for contrary to common assumption, most FOD occurs as a result of mechanical residual litter, not ground-to-compressor inhalation.

Pointed out right here is an aircraft troublemaker that's never left us since Wilbur's machine first needed fixing: housekeeping following mechanical work.

There has been a recent upswing in nut, screw and bolt FOD in jet engines, which are, because of their relatively high position, naturally protected from earthbound crud. How, then, do you suppose all this hardware got into the engines? The sad conclusion is that it was left behind in places where it could be swallowed.—*AA Maintenance Letter*

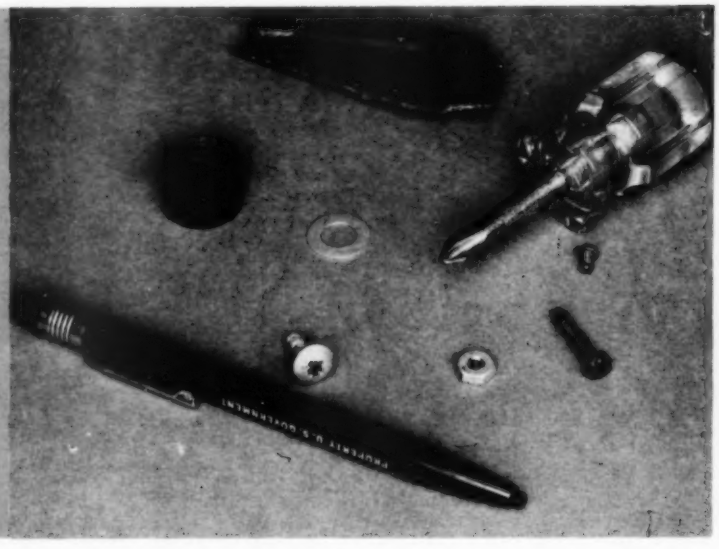
AZ Rating, Reading and Writing

Signs of the Times? It appears that before long people in the AZ rating group will be required to know foreign languages, too. A recent Disassembly and Inspection Report (DIR) on an R-1820-82A engine from an S-2A noted that spaces 8, 18, 19 and 20 were left blank because engine log entries were written in a foreign language and couldn't be translated.

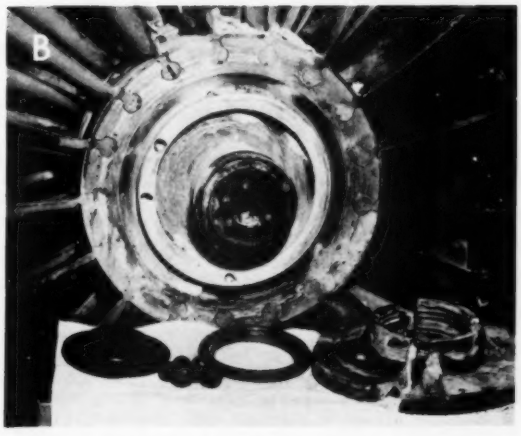
Reminds us of some handwriting in Americanese we've tried to read and a TV beer commercial in Chinese dialogue that comes out real *bare* too, ***Bud.***

Foreign Objects

An F-8E, just back from O&R was given an acceptance check and had flown a few hops. A mechanic working in the cockpit dropped a small screw into the throttle quadrant area. To retrieve same he removed the side panel and discovered the following objects: screwdriver, grease pencil, metal dust cover, part of a plastic cover, three screws, a nut and washer (see photo). While this bird had never been griped for throttle problems a number of others have—some with disastrous results. Moral: Anytime you drop something anywhere in an aircraft —*please recover same.*



MURPHY'S LAW *



Evidence of no oil to no. 1 bearing.

This is a Murphy situation and Murphy's Law applies. Cross-connected oil lines led to failure of a J34-WE-34 engine and an inflight fire in an SP-2E.

The primary part failure was the no. 1 bearing assembly (photo A) resulting from oil starvation caused by misrouting the lube oil pressure hose from the thermostatic valve to the bearing assembly and the lube oil scavenge line from the no. 1 bearing scavenge port to the no. 1 bearing pressure inlet port. (See photo B).

Recommendations:

Mechanics exercise utmost care for correct routing and clamping when removing and reinstalling the various fuel or oil hose assemblies. Constant reference to the maintenance manuals should be made as a doublecheck on the installation of hoses.

That the engine manufacturer shorten the oil hose between the thermostatic valve and the no. 1 bearing support. Incorporation of the orifice tee and adapter (EB 340) and the knife edge filter assembly (EB 281) would permit the use of a shorter hose in this location precluding an erroneous installation.

—Contributed by NATSF

"Chief, even if I change my name won't you put me on a check crew?"

* If an aircraft part can be installed incorrectly, someone will install it that way!

LETTERS

New Fire Warning Systems

Washington, D. C.—The August issue contained an excellent article stressing the need for careful maintenance of fire warning systems to prevent false fire warnings due to shorts in the system. Readers may be interested in knowing that improved fire warning systems are now available.

Mil-F-7872B(Wep) now requires that fire warning systems shall be capable of tolerating a short or a ground without producing a false alarm signal. This system is in A-4E aircraft and will also be used in other new aircraft. The new system still has one shortcoming—it becomes deactivated if grounded or shorted. This drawback is considered preferable to a false alarm.

The new spec further spells out a design objective for a system that will continue to operate even while it is shorted. This will become a design requirement when the state of the art can produce a reliable system capable of functioning while shorted. Meanwhile, the preflight and inflight checks are easily accomplished, and insure that if a short in the system develops it will be detected quickly.

A. B. NEHMAN
RAAE-3, BUWEPS

Poster Blasted

FPO San Francisco—Concerning poster "Quality Control is Safety Control": What role is the chief playing here? Is he making out a ground accident report for the inevitable crunch, a satisfactory Q.C. inspection, or a notation that the vice grips belong to ordnance and not airframes? I am referring to the vice grips used to hold flaps up.

The cost to this squadron was two flaps and wing trailing edges in learning this lesson. We now require the use of flap locks with red streamers exclusively. If other squadrons have not yet learned their lesson, this poster will certainly not help.

ED HEIBERT, LTJG
SAFETY OFFICER, VA-155

• See next letter.

FPO San Francisco— . . . an improper tool by all means and a menace. The proper tool is a C-clamp with small strips of wood for chafing strips and a warning pennant to preclude overlooking after maintenance. You may find even better tools for this purpose. . . .

C. E. HEIDEMANN, AMS1
Q.C. DIV, VA-165

• See next letter.

FPO San Francisco—I was mobbed for hanging this poster in squadron spaces. Embarrassing! . . . Hope you get blasts from Q.C. units from all over the fleet. Other than this, my hat's off to the Safety Center for its outstanding work.

R. O. ANDERSON, AE2
Q.C. DIV, VA-94

• Whatta Blast! Perhaps this would have been a better "What's-wrong-with-this-picture?" poster. It's possible the chief is putting the offender on report or even working up a design for a better device to hold the flap up. In any case, your comments point up the need for such a device. Crunches and flight aborts stemming from this practice also support such a need. If you've built a better flaptrap let us know—we'll spread the word. Meanwhile, NASC Poster Quality Control procedures are being tightened. Please scratch this poster; a new one is in the offing.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, U. S. Naval Aviation Safety Center, NAS Norfolk, Va. Views expressed are those of the writers and do not imply endorsement by the U. S. Naval Aviation Safety Center.

Pilot Rescue

San Diego, Calif.—Concerning the comments and recommendations in "Point of View," October APPROACH, p. 30, the following is offered:

Commander Cruiser Destroyer Force, U. S. Pacific Fleet Instruction P3130.2A (CruDesPacInst P3130.2A) Revised October 1963, "*Search and Rescue Guide*" states in Chapter 7, (Rescue Destroyer Plan and Pilot Rescue Procedures) para. 700 h: "Rescue swimmers are an important part of the rescue team. They have been the difference between success and failure in many destroyer rescues of airmen. A recent change in destroyer equipment allowance provides for two Wet-type Swimmer Suits for each destroyer. The best swimmers should be assigned to the pilot rescue team, regardless of rank or rate. They should be afforded opportunities to practice using the wet suits. With these suits, swimmers can go into 35°F water safely, and perform efficiently.

While the instruction does not specifically state that swimmers will carry knives, the equipment allowance includes: 1 knife (sharp) of the APL 2-95001/series; two rescue knives, stock no. 9G1-5110-524-6924 w/spare blades; 2 per shears, material, cutting, hand, stock no. GM5110-242-2861 (one each of the latter two items for swimmer use) and cutters, cable, single hand type, stock no. R5110-224-7053-523 (for swimmer use).

Detailed instructions on rescue procedures and techniques are also included in Chapter Seven.

Chapter Eight outlines the pilot res-

cue exercise to be included in the ship's ORI, lists and describes training facilities available, training aids and briefings and written materials, including the ComTraPac Course C-10, Swimmer, Water Survival, Pilot Rescue (one week).

The instruction also prescribes the duties of the ships' Commanding Officer regarding the establishment, training and proficiency of rescue teams. It also charges the Unit Commander with the requirement for a practical demonstration of the ship's capability during the ORI and a periodic (semi-annual) demonstration (in water) of the rescue team to insure a continuous capability.

I feel that the effort is being made to provide well-trained and qualified rescue teams aboard destroyers. Our efforts to provide *better trained* and *better equipped* rescue teams shall not cease.

D. H. PICHT, LCDR
AVIATION OFFICER
COMCRUDESPAC STAFF

• Thank you very much for your informative letter. We take pleasure in passing it along to our readers. Keep up the good work!

Molders' Shoes

FPO, San Francisco—The following may be of some help in regard to steel-toed safety shoes for use on flight decks. The AQs in this squadron wear molders' safety shoes while using liquid nitrogen. These shoes are of a higher quality than those described in the September APPROACH. We draw flight deck (non-skid) soles and heels from supply and replace the original ones—thus we have safety-toed flight deck shoes.

L. B. VIOLETTE, AQF3
VF-211

• Thank you for your letter. Headmouse referenced the molders' shoe in the March 1964 APPROACH but to help our readers put the heels and soles on the shoes, here is the necessary supply information: Stock numbers for the heels and soles can be found in the Federal Supply Catalog Identification List (C8300-IL-NO), Group 83, page 84. Stock numbers for the molders' shoes are in the Section H Allowance List (00-35QH-2), page 30, Item 408.

Underwater Escape

Godalming, Surrey, England—Having recently come on to your subscription list as paying subscribers . . . I have noted with interest on page 47 of your February issue references to various copies of APPROACH etc., covering "Underwater Escape." As this is a problem in which we are closely interested, I should be grateful if you will please supply us with the same information which you have sent to ENS L. W. Branchflower.

While I know we sent copies to the Naval Aviation Safety Center at the time of publication, I am taking this opportunity to send you a further copy of "Safety in Over-Water Flights" in case you did not personally see it.

B. W. TOWNSHEND
CONSULTANT ON SEARCH, RESCUE AND SURVIVAL
R. F. D. CO., LTD.

• Thank you for your letter. Our safety and survival people retained their initial copies. On hearing from you again, they once more remarked on the vast amount of research which your study represents. We are herewith forwarding the references you requested concerning underwater escape.

Write-up Aid

San Diego—Your September issue has been perused from "Tail First" to "En Garde" and let me join the ranks in congratulating APPROACH for continuing as No. 1 in aviation safety magazines.

"Maintenance Memo" page 45, points up a situation found (I'll bet) in every unit operating aircraft. We engineering types unconsciously refer to all non-engineering types as "those" pilots, or some other term of endearment commensurate with the discrepancy write-up.

One method I've used to encourage complete, factual write-ups is to pick out several excellent entries and read them at our APM, citing who wrote it, why it was good and how it saved maintenance hours. At the same time one or two beauties such as "Radar inop." or "Check #2 ADF" or "#1 HF NG. See George AT2" are mentioned for comparison. Pilots are encouraged to discuss symptoms with technicians as an aid in presenting a coherent account.

As a pilot I appreciate the desire to get away from the aircraft upon completion of the flight. As a maintenance officer, I cry easily.

H. B. THORSEN, LCDR, USCG
ENG. OFFICER, CGAS

• Kind words, sir. We try to live up to them. Your method appears to be simple, straightforward and should eliminate the "beauties." It rates high on our "Recommended" list.

FDR War on FOD

FPO, New York—A renewed program to prevent FOD is being pursued aboard ROOSEVELT. The greater suction generated by the intakes of the J-79 engines installed in F-4 aircraft adds to the importance of such a program.

Included in this program are daily walkdowns of flight deck, catwalks, weather walkways, careful scrutiny and accountability of catapult launching hardware and catapult track bolts. Frequent reminders to flight deck personnel to remove objects from their pockets (such as pens, pencils, cigarets and magazines) are made on the 5MC. In addition each squadron pursues a rigorous maintenance quality control program and FOD prevention program in accordance with ComNavAirLant directives.

To assist in this program it is desired to research available articles on this subject with a view toward applying all preventive measures. Unfortunately our library of APPROACH magazines does not include many back issues. It is requested that a copy of those articles published in APPROACH as listed in the latest Cumulative Index, be forwarded for this purpose.

M. W. CAGLE, CAPT.

• Copies of most issues listed in the Cumulative Index July 1955 to June 1962 are on the way, plus issues of Dec 62; Feb, April, June, Aug and Nov 63; and Aug 64. Issues not furnished are those out of print.

Looks as though ROOSEVELT has a dynamic program going—others would do well to follow the procedures you have outlined. FOD prevention, like other accident prevention requires continuous pursuit. For example, thinking among some, a few years ago, was that the accident rate was about as low as it could get. Others were convinced the rate could be lowered—and it was.

If FOD prevention attitudes prevailed fleetwide like those of the FDR then the rate is certain to come down.

"I'm not seasick, just practicing."

Vol 10 **approach** No 6

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

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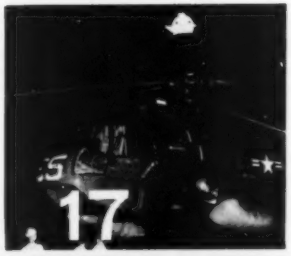
DEPARTMENTS



NavWeps 00-75-510

CREDITS

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Photo (bottom) courtesy Mrs. CYRUS SYLVESTER, Pensacola, Fla.

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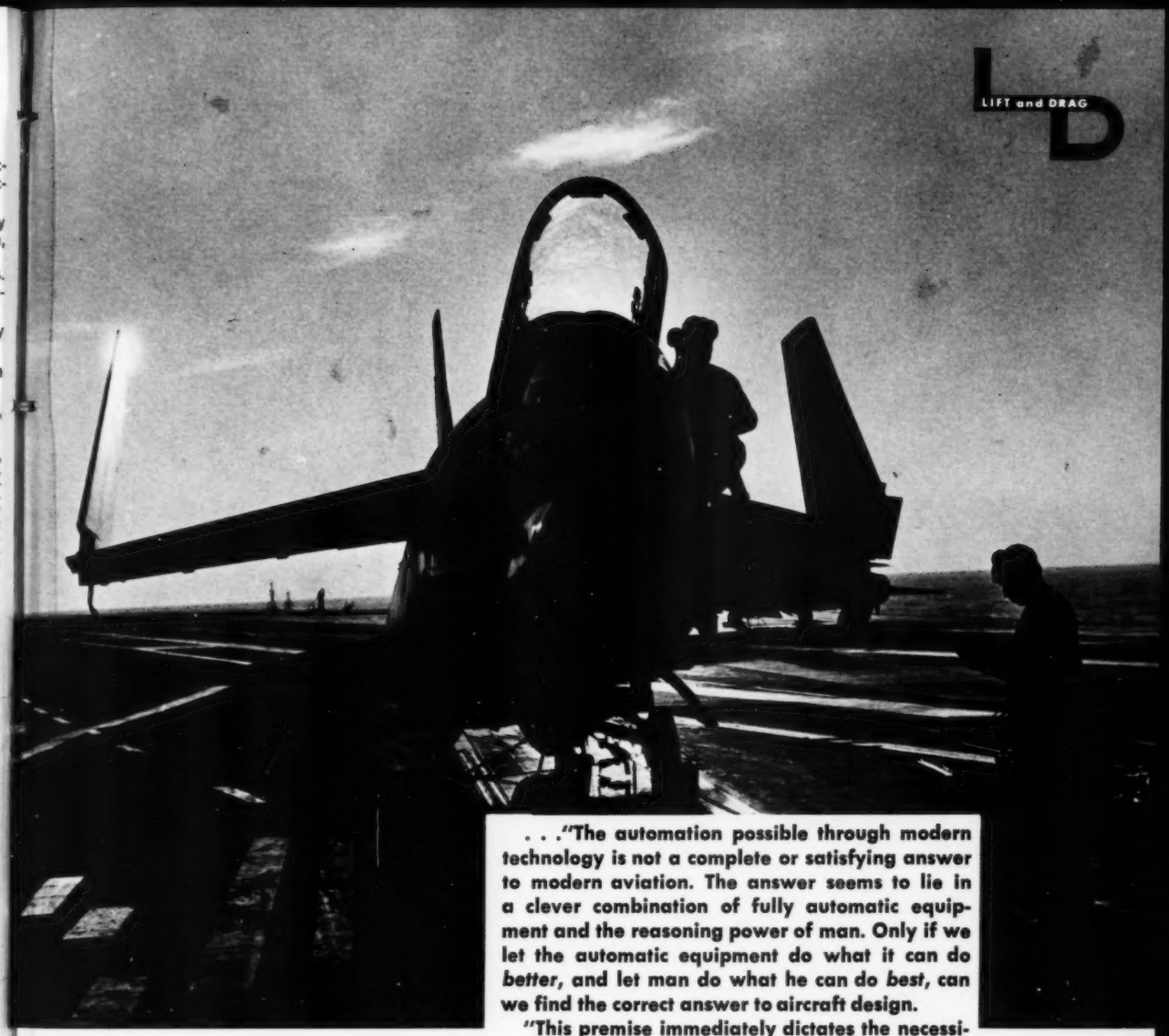
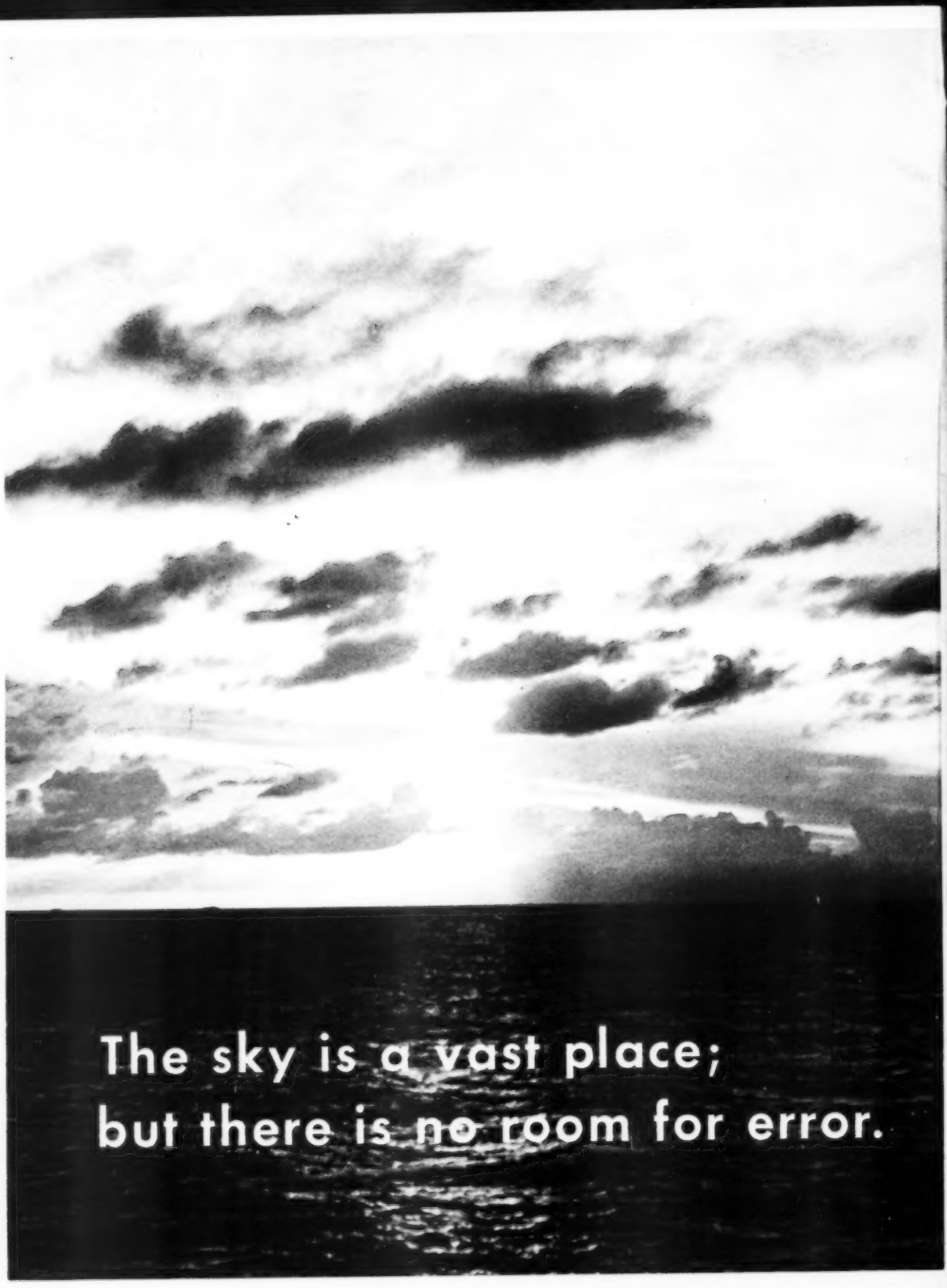


The Time Factor

. . ."The automation possible through modern technology is not a complete or satisfying answer to modern aviation. The answer seems to lie in a clever combination of fully automatic equipment and the reasoning power of man. Only if we let the automatic equipment do what it can do *better*, and let man do what he can do *best*, can we find the correct answer to aircraft design.

"This premise immediately dictates the necessity for designing aircraft around the man and his requirements rather than having to modify and distort man to fulfill the needs of the vehicles. It is evident that any stop-gap procedures necessary in trying to adapt man into an environment or situation not designed to meet his requirements are inadequate. Man's requirement in aircraft will vary with the type of vehicle considered, the mission to be performed, and the *time* of continuous operation. Of these variables, the most significant is the 'time' factor which dictates the breadth of the Aeromedical problem involved in any of the other variables."

—CAPT C. P. Phoebus, MC


The sky is a vast place;
but there is no room for error.